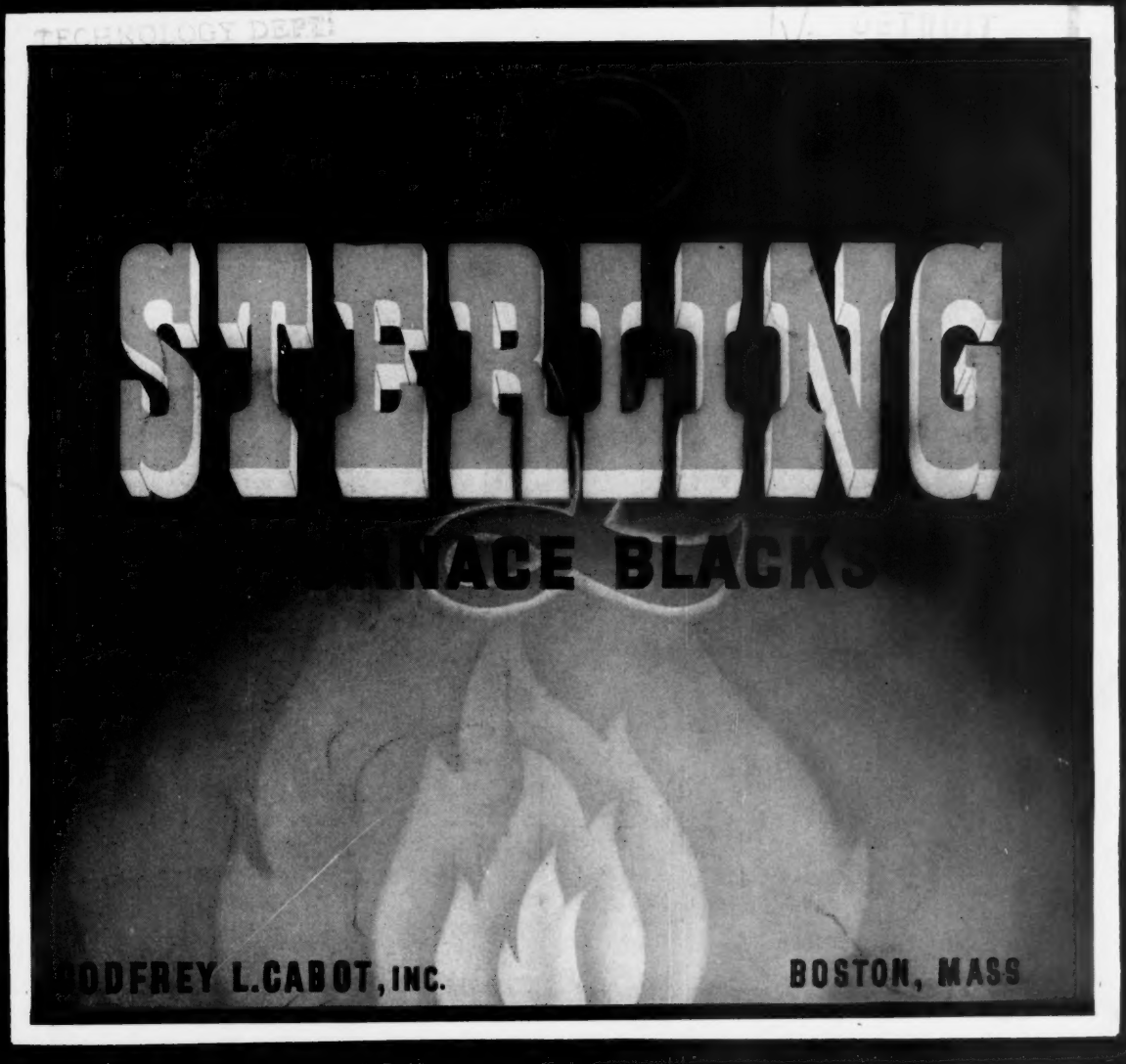
SEPTEMBER, 1944

TECHNOLOGY DEPT.



Newsletter No. 9
SEPTEMBER, 1944

Published by Rubber Chemicals Division of DU PONT

NEOPRENE

THE MOST VERSATILE SYNTHETIC RUBBER

NEOPRENE has the strength and adaptability of crude rubber and is flame, oil, heat and age resistant.

NEOPRENE LATICES have replaced natural latex in nearly all applications—generally with better results.

SOLID TYPES

Neoprene Type GN-A

All-purpose type, comparable to Type GN, with improved processibility.

Neoprene Type E

Limited use for specialties.

Does not progressively soften with prolonged milling.

Neoprene Type CG

Primarily for quick-setting, high bond strength adhesives.

Provides greater stiffness in uncured stocks.

Neoprene Types FR and FR-S

Freeze-resistant—for very low temperature service and maximum resilience.

Neoprene Type KNR

For troweling putties and paints used in tank linings and protective surface coatings.

For preparing easily processed, highly loaded stocks.

LATEX TYPES

Neoprene Latex Type 571

50% Solids.

All-purpose latex for general use.

Neoprene Latex Type 571 Concentrate

60% Solids.

For general use where high solids are required.

Minimum of odor.

Neoprene Latex Type 60

59% Solids.

For special applications.

Especially suited for froth sponge.

Neoprene Latex Type 572

50% Solids.

A fast-setting, high wet strength latex for adhesives.

●

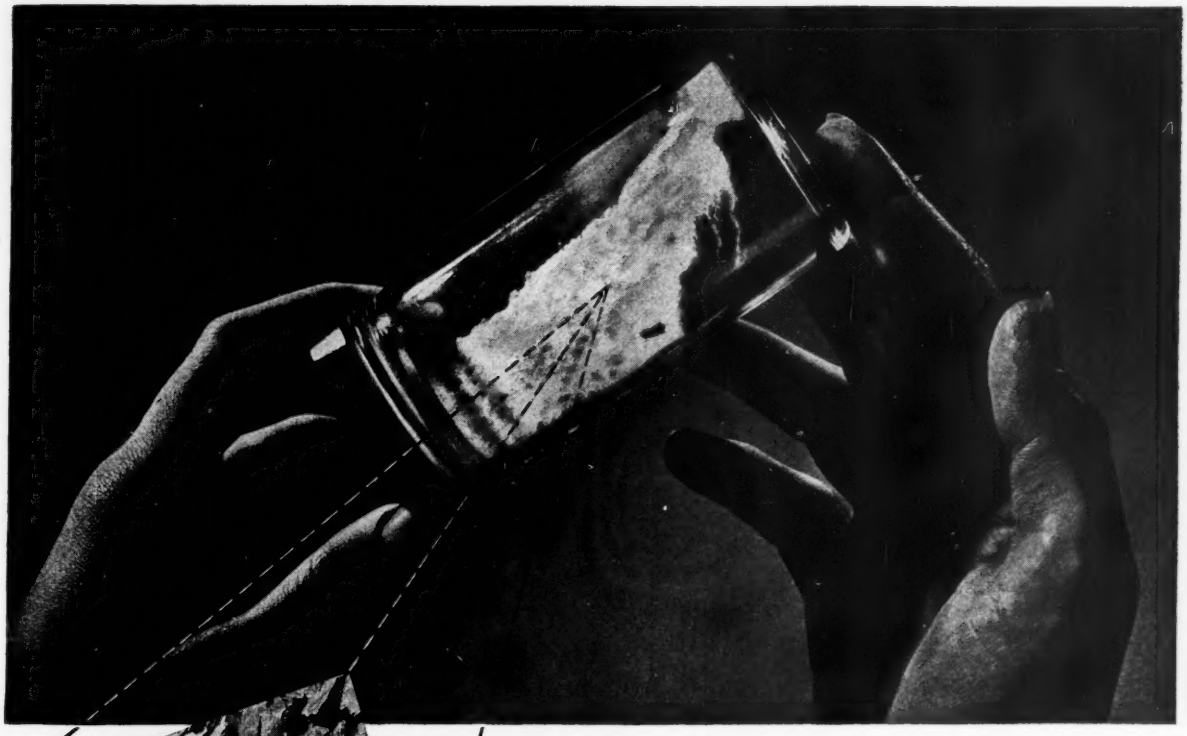
BACK THE ATTACK
WITH WAR BONDS

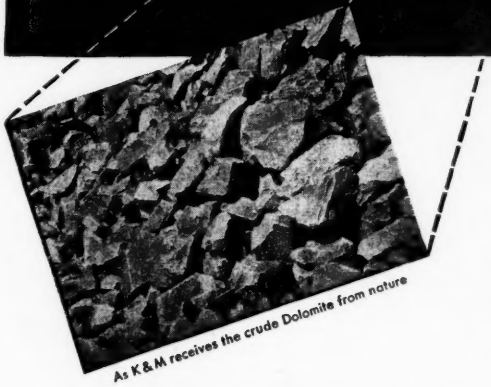
DU PONT

RUBBER CHEMICALS DIVISION

BETTER THINGS FOR BETTER LIVING . . . *Through Chemistry*

India Rubber World, September, 1944, Vol. 110, No. 6. Published monthly by Bill Brothers Publishing Corp., 1309 Noble Street, Philadelphia 23, Pa. Editorial and advertising offices, 386 Fourth Avenue, New York 16, N. Y., U. S. A. Entered as second-class matter October 5, 1889, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription, United States and Mexico, $3.00 per year; all other countries, $4.00; single copies, 35 cents.



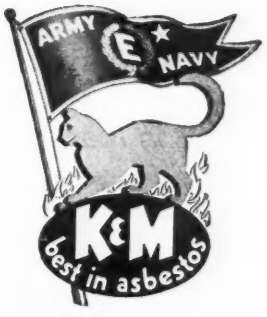


As K&M receives the crude Dolomite from nature

KEASBEY & MATTISON
insists on all-the-way control for
LIGHT MAGNESIUM OXIDE

There's a reason why Neoprene Compounders can *depend* on K&M Light Magnesium Oxide. Complete control from raw material to the finished product is exercised in its manufacture. And that means Light Magnesium Oxide of quality, uniformity, economy . . . for you.

In order to keep abreast with increased demands, Keasbey & Mattison have expanded production facilities for Light Magnesium Oxide. Same quality . . . same satisfaction . . . but now there's more available than before from stock points listed below.



Our Ambler plants proudly fly the Army-Navy "E" flag with its star — an honor awarded K&M employees "for continued outstanding production of war materials".

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

One of America's oldest and most reliable makers of asbestos and magnesia products. Founded 1873.

OUR DISTRIBUTOR FOR K&M LIGHT MAGNESIUM OXIDE IS:

AMERICAN CYANAMID & CHEMICAL CORPORATION

30 Rockefeller Plaza, New York 20, N. Y.

SALES REPRESENTATIVES TO THE RUBBER INDUSTRY AND STOCK POINTS:

AKRON, OHIO, Akron Chemical Company
BOSTON, MASS., Ernest Jacoby & Company
CHICAGO, ILLINOIS, Herron & Meyer
LOS ANGELES, CAL., H. M. Royal, Inc.
TRENTON, N. J., H. M. Royal, Inc.

PHILBLACK A

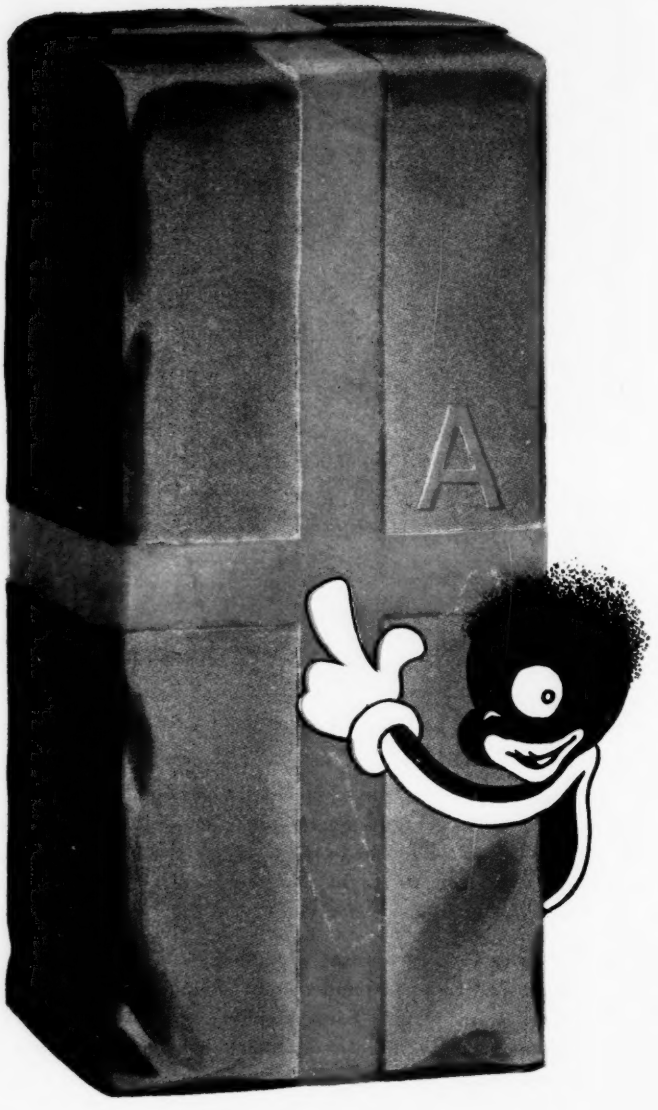
Now just as easy to identify as it is to process

For your convenience, Philblack A is now packed in bags distinctively marked with broad crossed stripes of orange.

This clear and simple marking, giving immediate recognition, will aid you in the handling of your warehouse stock.

From now on, every time you see those broad orange stripes, you will know at once that the bag contains Philblack A, the new easy processing HMF type black which gives low heat build-up plus good abrasion.

The complete story of the properties and advantages of Philblack A is concisely and graphically presented in an illustrated booklet. Write for it . . . and for prices, availability and samples.



PHILLIPS PETROLEUM COMPANY
Philblack Division

FIRST CENTRAL TOWER • AKRON, OHIO

3 IMPORTANT SUGGESTIONS For Your GR-S Stocks

1 To protect the polymer during processing, particularly the effects of high temperatures in breakdown or mixing, add one percent (on 100 GR-S) of

BLE-POWDER

2 To protect your GR-S products from effect of static exposure to sunlight and ozone, add one to three percent (on 100 GR-S) of

SUNPROOF

3 To protect your GR-S products in service, to maintain their best characteristics over the maximum time, accelerate the compounds with a thiuram

MONEX-TUEX-ETHYLTUEX-PENTEX

PROCESS . . . ACCELERATE . . . PROTECT with NAUGATUCK CHEMICALS

Naugatuck Chemical

DIVISION OF UNITED STATES RUBBER COMPANY
ROCKEFELLER CENTER NEW YORK 20, N. Y.

IN CANADA: *Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ont.*

Good for Another 30,000 Miles?

SURE the tire is smooth. But if it hasn't been abused in service, it's good for 2 or 3 recap jobs. With reasonable care, by holding down driving speeds, by easy starting and stopping, and maintaining correct air pressures, it can deliver double the mileage for which it was originally intended.

You can thank America's skilled tire engineers for this doubling of tire life. For it is more than just a matter of recapping materials and application.

In your prewar tires, rubber company engineers, designed and built in *extra* quality and safety in sidewalls, the inner cords (carcass) and the bead. It is only because these constructions have generally stood up that it's possible for millions of motorists to continue driving with 4 and 5 year and even older tires.

Bead construction might have been made cheaper, but tire manufacturers purposely set high standards of workmanship and specified high quality steel wire for bead making.

And close collaboration between rubber engineers and National-Standard has resulted in reducing bead failures to a minimum.

Since the early days of the rubber industry, National-Standard has pioneered the development of better wire, improved wire construction and the design and building of wire applying machinery to improve and speed up production.

National-Standard's long experience naturally lead to the development of special wire for the improved service and longer life of many other rubber products, including many types of flexible hose, V-belts, conveyor belts, aircraft ignition cable shielding, and coverings for electrical cables.

National-Standard's engineering and research staffs are working on new uses and constructions of wire to improve scores of other products. Perhaps these developments can benefit your products—why not write and find out?

BACK THE ATTACK —BUY MORE WAR BONDS

NATIONAL STANDARD *Company*

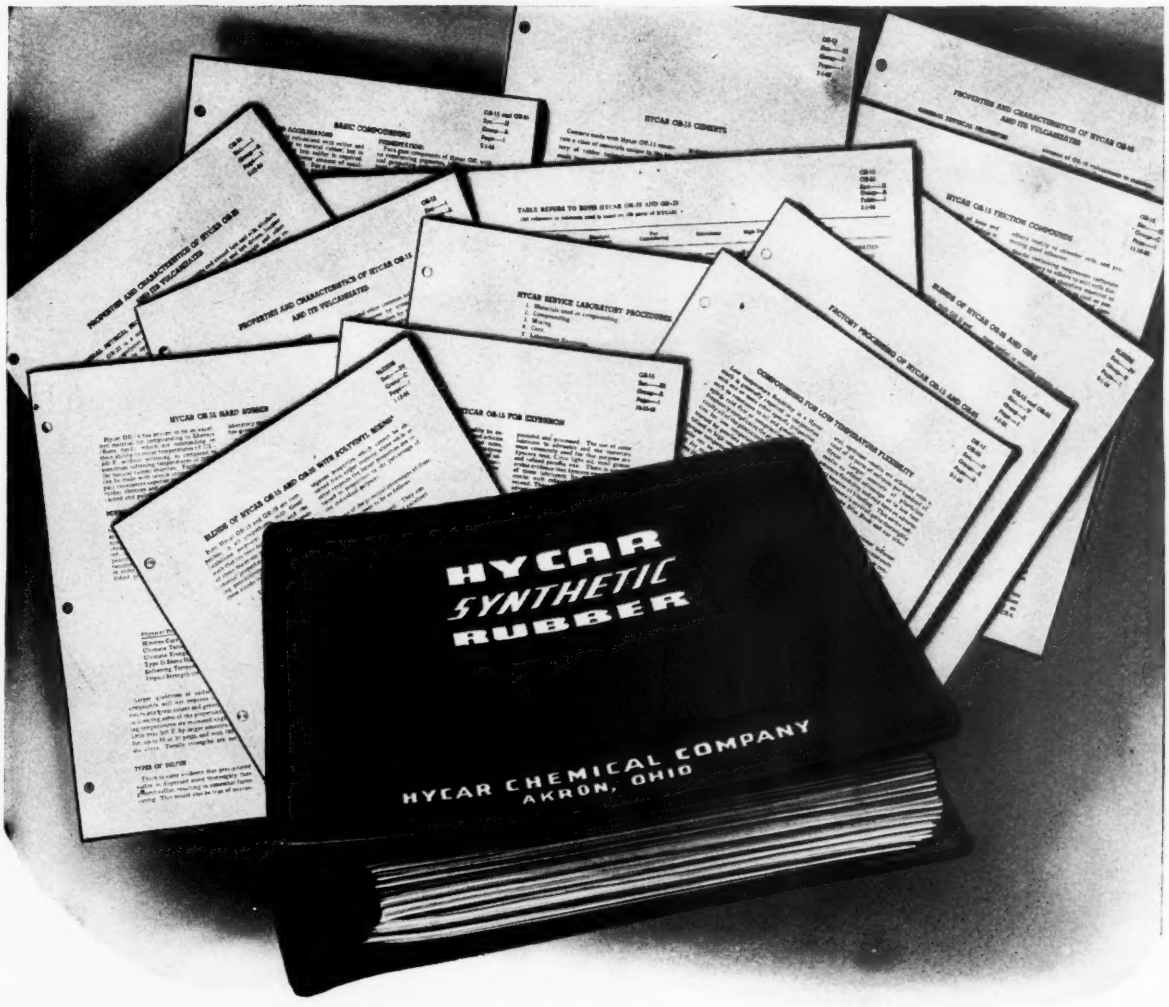
Divisions of National-Standard Company

NATIONAL-STANDARD
Niles, Mich.
TIRE WIRE, FABRICATED BRAIDS AND TAPE

ATHENIA STEEL
Clifton, N. J.
COLD ROLLED, HIGH-CARBON SPRING STEEL

WAGNER LITHO MACHINERY
Hoboken, N. J.
LITHOGRAPHING AND SPECIAL MACHINERY

WORCESTER WIRE WORKS
Worcester, Mass.
ROUND STEEL WIRE, SMALL SIZES



Keeping Our Customers Posted

WIDELY distributed to interested technical executives, the Hycar Blue Book is designed to keep our customers fully informed on the latest developments in Hycar compounding and processing. Supplemental material to be furnished from time to time may be easily inserted in the various sections and groupings within the loose-leaf binder.

With the rapidly expanding application for Hycar Synthetic Rubber, this added customer service is of real value to our many Hycar users.

Paper shortages, we regret, make it necessary to limit distribution to a certain extent. However, every effort will be made to fill all requests for the Blue Book to meet the actual requirements of Rubber Companies and organizations directly serving the Rubber Industry.

Our technical service staff is available to help solve any of your special problems not fully explained in the Blue Book. *Hycar Chemical Company, Akron 8, Ohio.*

Hycar

Reg. U. S. Pat. Off.

LARGEST PRIVATE PRODUCER OF BUTADIENE TYPE

Synthetic Rubber

Correct pronunciations and meanings of commonly used synthetic rubber names and terms are given in the new pocket-size Hycar Glossary. Write for free copy.

in the four corners of the earth

On every industrial and transportation frontier, Barco Flexible Joints stand guard over fluid-conveying pipes... helping to minimize the destructive action of vibration and shock. *Thirty years of continuous use have only strengthened engineering endorsement of the Barco principle and design.* Barco Manufacturing Co., Not Inc., 181(Winnemac Ave., Chicago 40, Ill.

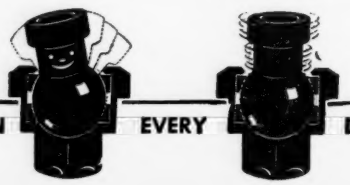
In Canada: The Holden Co., Ltd., Montreal, Canada

Bicycle Tire Mold operated by Steam equipped with Barco Joints

BARCO *FLEXIBLE JOINTS*

THE FREE ENTERPRISE SYSTEM IS THE SALVATION OF AMERICAN BUSINESS

Not just a swivel joint... but a combination of a swivel and ball joint with rotary motion and responsive movement through every angle.



• NAFTOLEN, a product of proven merit for rubber and synthetic rubber compounding, is now available in emulsion form for users of latex and dispersions. This new WILMINGTON CHEMICAL development opens to the latex field the unique possibilities of this unsaturated and sulfur-reactive hydrocarbon. Your sample is now ready for shipment.

Have you tried other WILMINGTON CHEMICAL products?

PLASTICIZER-EXTENDERS
NAFTOLEN R-100
MULTI-PLAST MV
MULTI-PLAST HV
ECONO-PLAST

FILLER-PLASTICIZER
NAFTEX

REINFORCING PLASTICIZER
WILMEX M

W C=C
REG. U. S. PAT. OFFICE

WILMINGTON
CHEMICAL CORPORATION

10 EAST 40TH STREET • NEW YORK 16, N. Y.

20,000,000 Pounds More PELLETEX per Year

General Atlas Carbon, producers of the semi-reinforcing furnace blacks, PELLETEX and GASTEX, take pleasure in announcing construction of an addition to the Pampa plant which will increase the production capacity of PELLETEX by 20,000,000 pounds annually.

The new producing units will be placed in operation as quickly as wartime restrictions of labor and materials permit. It is our earnest hope and expectation that this additional capacity will enable our customers to obtain their requirements promptly both now and after victory, and we express our deep appreciation of your patience under the most difficult conditions in our history.

Needless to say, the recognized high standard of quality which PELLETEX and GASTEX enjoy will be maintained.

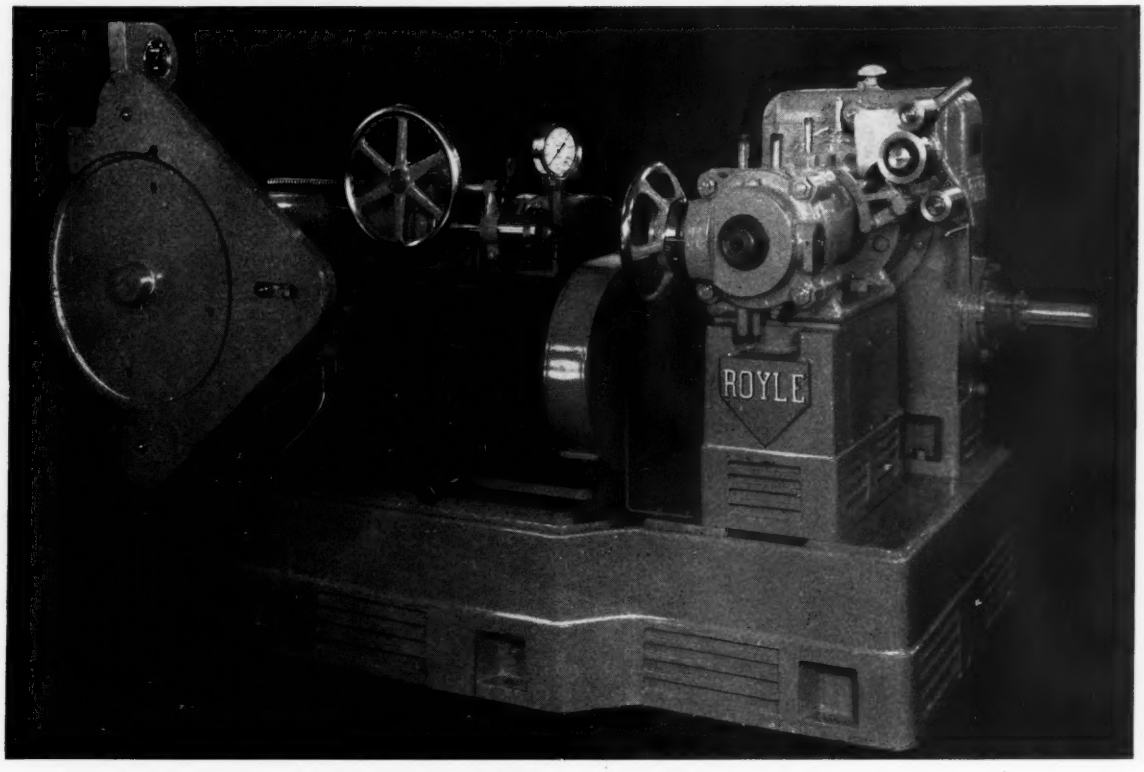
HERRON BROS. & MEYER
OHIO BLDG., AKRON, OHIO.
GENERAL SALES AGENTS FOR
GENERAL ATLAS CARBON
PAMPA, TEXAS — GUYMON, OKLA.

PELLETEX TRADE MARK

GASTEX TRADE MARK

DISTRICT SALES AGENTS

ERNEST JACOBY & CO., Boston
HERRON BROS. & MEYER, New York
THE C. P. HALL CO. OF CALIF., Los Angeles
HERRON & MEYER, Chicago
H. M. ROYAL, INC., Trenton, N. J.
ST. LAWRENCE CHEMICAL CO., LTD., Toronto - Montreal



No. 2 Royle Continuous Vulcanizing Insulator

Enough Rubber for the Offensive Thanks to American Industry

When the history of this war is written, it may well be that the most serious setback handed the Axis resulted from the spontaneous and wholehearted spirit of cooperation exhibited by the Rubber, Chemical and Petroleum Industries in meeting the threat to our rubber supply. Superb teamwork soon developed synthetic sources which possessed sufficient stamina to meet the more rigorous requirements of modern warfare.

Since the first Royle Tubing Machine was manufactured 64 years ago John Royle & Sons—working in close cooperation with the Rubber Industry—have kept pace with each phase of development. Royle Extruding Machines are designed to meet the specific requirements of the application involved.

Naturally, there has been a wealth of knowledge and experience acquired. This "know how" is built into Royle equipment — reflected in performance records.

JOHN ROYLE & SONS

ROYLE PATERSON N. J.

PIONEER BUILDERS OF EXTRUSION MACHINES SINCE 1880

Continental Europe
James Day (Machinery) Ltd.
London, England

Home Office
B. H. Davis J. W. VanRiper
SHerwood 2-8262

Akron, Ohio
J. C. Clinefelter
UNiversity 3726

PATERSON 3, NEW JERSEY

Solve many GR:S problems

These Columbia pigments have proved of value in products requiring special qualities in GR:S stocks. Here are just a few examples:

Wire Insulation . . .

Problem—to produce GR:S stocks having the necessary tensile strength.
Answer—Calcene T, readily dispersible in GR:S, confers tensile strength meeting specifications for many wire insulation stocks.

No-Mark Soles and Heels . . .

Problem—to provide GR:S soles and heels which will not mark floors.
Answer—Silene EF *and* Calcene T make a highly satisfactory no-mark sole and heel stock.

Inner Tubes . . .

Problem—to improve retention of elongation and minimize box cracking in GR:S.
Answer—Silene EF in GR:S confers these qualities, resulting in greatly improved inner tubes.

These uses may suggest possibilities for either or both Calcene T and Silene EF in GR:S stocks for your products. We shall be glad to furnish information at your request.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING · PITTSBURGH 19, PA.

CHICAGO • • • BOSTON • • • ST. LOUIS • • • PITTSBURGH • • • NEW YORK • • • CINCINNATI
CLEVELAND • • • PHILADELPHIA • • • MINNEAPOLIS • • • CHARLOTTE

UNUSUAL STRENGTHS are among the numerous advantages obtained in Columbia's new thermosetting plastic, Allymer. Other points of superiority are its resistance to heat, crazing and marring . . . form stability . . . resistance to weather and to solvents, as proved in various critical war materials. Allymer is now available in sample quantities for experimental purposes. You may have research reports and other free data by writing.

ONE FOR RIPLEY—A recent shipment of 60,000 cases of bottled beer to the South Pacific traveled 9,000 miles with the breakage of only 27 bottles! This remarkable packaging achievement of the Glass Container Industry focuses attention on its splendid wartime record. Among the many products destined for export in glass to our fighting men overseas, 1944 requirements call for 678,800,000 beer bottles . . . 50,000,000 bottles for water purifier tablets . . . 98,600,000 insect repellent bottles!

PIG IRON production gets a big boost when high sulphur content can be reduced. Soda Ash has the stuff, chemically, to do it—but the problem is to bring it into sufficient surface contact with the molten iron. Columbia solves it with its Soda Briquettes—compressed pellets composed chiefly of Soda Ash. Added to the ladle at the time the pigs are cast, Soda Briquettes get the surface contact necessary for effective desulphurizing—and reduce expensive dusting losses. A newly prepared folder will be furnished on request.

SODA ASH production records illustrate the tremendous Twentieth Century growth of the nation's chemical industry. A basic chemical for the Glass industry, Soda Ash is also used extensively by the Textile and Paper industries and serves in a wide variety of cleansing operations. In a single month, total U.S. production of Soda Ash now approximates that for the entire year of 1899 . . . and Columbia's own annual production exceeds that tonnage by a substantial margin.

COLUMBIA CHEMICALS include Soda Ash, Caustic Soda, Sodium Bicarbonate, Liquid Chlorine, Silene EF (Hydrated Calcium Silicate), Calcium Chloride, Soda Briquettes, Modified Sodas, Caustic Ash, Phosflake, Calcene T (Precipitated Calcium Carbonate) and Calcium Hypochlorite.

WHERE CAN YOU USE CHEMIGUM —the oil-resisting synthetic with superior processing qualities?

CHEMIGUM opens new doors to the manufacturer of rubber products, especially in many fields where a rubber-like material has been desirable but in which natural rubber never proved practical. It is not a universal "cure-all" for all applications, but it can be compounded to meet the prime physical requirement in many different types of service conditions. Tell us the characteristics you most desire, and Goodyear engineers will recommend the proper Chemigum compound.

For manufacturing purposes, Chemigum is available today only on approved allocation from the War Production Board, accompanied by your formal order. But for experimental purposes, up to 200 pounds per month may be supplied to individual customers without allocation. To order, or for further information, write: PLASTICS AND CHEMICALS DIVISION, SALES DEPT., Goodyear, Akron 16, Ohio — or 600 West 58th Street, New York 19, N. Y.

GOODYEAR

THE GREATEST NAME IN RUBBER

Chemigum (pronounced Kem-e-gum)—T.M. The Goodyear Tire & Rubber Company

CHEMIGUM COMPOUNDS CAN BE SUPPLIED WHICH ARE:

KEY

Satisfactory for most uses	A
Comparable with rubber	AA
Better than rubber	AAA

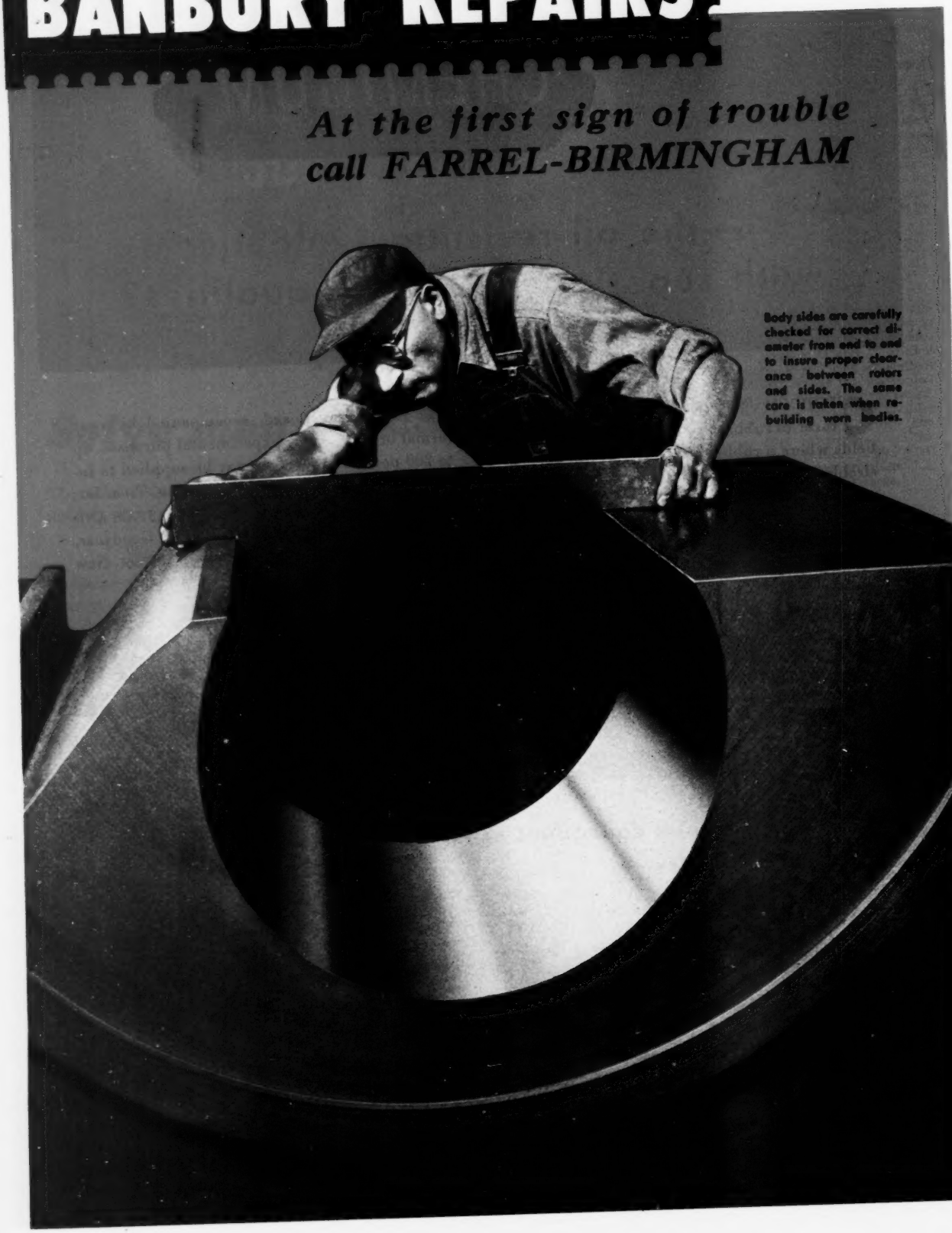
ELONGATION	AA
HARDNESS	AA
TENSILE	AA
COMPRESSION SET	A
ABRASION	AA
AGING SUNLIGHT	AA
HIGH-TEMPERATURE PERFORMANCE	A
LOW-TEMPERATURE PERFORMANCE	AAA
TEAR RESISTANCE	AA
ELASTICITY, RESILIENCE	A
SWELLING RESISTANCE —	
MINERAL OIL	AAA
GASOLINE	AAA
WATER 70° F	AA
ETHYLENE GLYCOL	AAA
VEGETABLE OIL	AAA
ACIDS	A
ALKALIS	A
ANIMAL OILS	AAA
FLAME RESISTANCE	AAA
ADHESION TO METAL	AA

A PRODUCT OF GOODYEAR RESEARCH

BUY WAR BONDS — BUY FOR KEEPS

BANBURY REPAIRS

At the first sign of trouble call FARREL-BIRMINGHAM



Body sides are carefully checked for correct diameter from end to end to insure proper clearance between rotors and sides. The same care is taken when rebuilding worn bodies.

We will send a man, either from Akron or Ansonia, to examine and report to you on the condition of your Banburys. If minor repairs or adjustments are all that are necessary, they will be taken care of immediately — right on the spot — by an experienced service man, *a man who understands the basic design principles of the machine.*

It will pay you to turn over your repair work to the only company with complete knowledge of Banbury requirements. Our reputation as builders of Banbury Mixers guarantees satisfactory repairs.

A large stock of parts is maintained for replacement.

For quick service write, wire or 'phone

In the East—
WALTER D. TAYLOR
Farrel-Birmingham Co., Inc.
Ansonia, Conn.
ANSONIA 3600

Around Akron—
FRANCIS J. COLLINS
Farrel-Birmingham Co., Inc.
2710 First Central Tower, Akron 8, Ohio
JEFFERSON 3149

These expert service men are also prepared to make periodic examinations of your Banburys — a service that may avert the need for major repairs.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles

Bodies requiring extensive overhauling can be returned to our plant where they will be dismantled, cleaned and thoroughly inspected to determine the extent of repairs necessary.
General repairs include:

1. **Building up rotor bodies to original size and contour. As the developer and manufacturer of the Banbury Mixer, Farrel-Birmingham is the only company which has necessary jigs and fixtures and complete drawings showing original dimensions.**
2. **Truing up rotor journals by grinding, and installing four new main bearings to suit.**
3. **Restoring insides of chamber bodies to original dimensions by building up with wear resisting material. If metallurgical tests indicate welding inadvisable for satisfactory and lasting repair, sides of bodies may be relined or new sides furnished.**
4. **Installation of complete set of new dust stop rings.**
5. **Turning and recutting of connecting gears, or installation of new gears if necessary.**
6. **Repair or replacement of end-thrust adjustment.**
7. **Replacement of broken and missing spray piping.**
8. **When sliding door is returned—repair or replacement of worn parts, including door top replacement when necessary.**
9. **Reassembling, testing, painting, boxing and shipping.**

Farrel-Birmingham

LOEWENTHAL
AND
RUBBER

Inseparable Since 1868

There is no substitute for experience plus ability. We have served the rubber reclaiming industry with expertly selected and assorted scrap rubber since its inception, and the experience thus gained, together with the extensive facilities developed over the years, is insuring today the best and most satisfactory service. Let us meet your scrap requirements properly and promptly.

THE LOEWENTHAL CO.

JACK SIDER, *President* J. K. McELLIGOTT, *Exec. Vice-Pres.*

We Solicit Your Inquiries

188 W. RANDOLPH STREET
CHICAGO 1, ILL.

159 CLEWELL STREET
AKRON 5, OHIO

Cable Address: "Gyblowell"

There is an OROPLAST

For Every GR-S Processing Need

OROPLAST L for smooth tubing operations and for soft stocks of 40° hardness.

OROPLAST M for calendering, tubing and skim coating operations; for all molded goods.

OROPLAST H for carbon black master batches; for maximum plasticity of raw stock at processing temperatures; for tear resistance at elevated temperatures.

All grades of Oroplast produce highest elongation values without sacrificing tensile strength. Oroplasts are uniform chemical products designed and produced for the specific purpose of softening and extending GR-S rubber.

Write for our suggested formulations, using Oroplast in mechanical rubber goods from GR-S.

PRODUCT OF THE
ORONITE CHEMICAL COMPANY
OF SAN FRANCISCO, CALIF.

Sole Distributors

ADVANCE SOLVENTS & CHEMICAL CORPORATION

245 Fifth Avenue • New York, N. Y.

for **INSULATED WIRE**

Tensile Strength

Resistance to aging

Dielectric strength

Write Our Technical Service Dept. for Details

MOORE & MUNGER

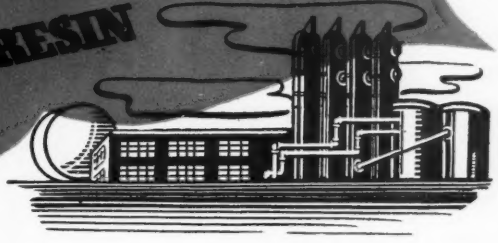
33 RECTOR STREET - NEW YORK CITY

For Synthetic . . . Reclaimed . . . Natural

RUBBER

PICCOUMARON

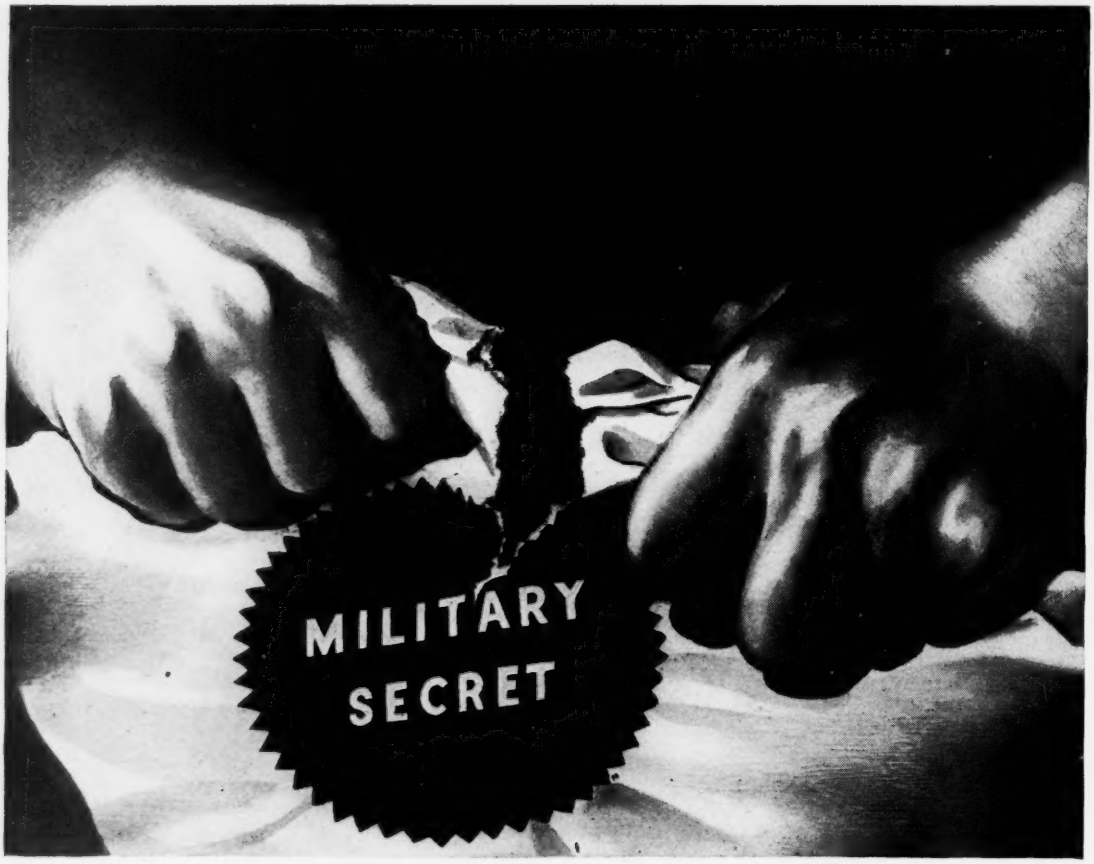
PARA • COUMARONE
INDENE RESIN



Made in a wide variety of grades providing properties suitable for all types of rubber goods.

Distributed to the Rubber Industry by
STANDARD CHEMICAL COMPANY
AKRON, OHIO

PENNSYLVANIA
INDUSTRIAL CHEMICAL CORPORATION
CLAIRTON, PENNSYLVANIA



BREAKING THE SEAL

When the seal of military secrecy can be torn from new products born of the war, myriad peacetime applications will clamor for development. Call our technical experts and research scientists now . . . to help you plan your reconversion job!

Warwick Chemical Company

WEST WARWICK, R. I. • 580 FIFTH AVE., NEW YORK CITY • ROCK HILL, S. C.

© 1944 Warwick Chemical Co.

Impregnole Water Repellent • Luminous Pigments • Metallic Stearates • Metallic Resinates
Petroleum Waxes • Sulfated Oils • Synthetic Detergents • Textile Compounds • Wetting Agents

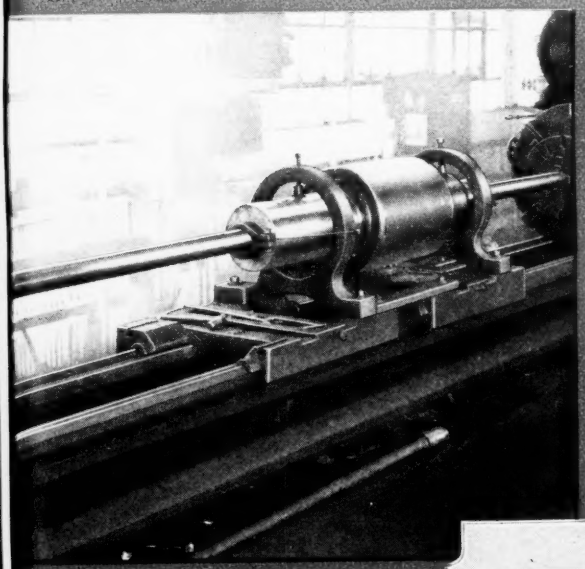
UNITED ROLLS

Precision Built

FOR

THE RUBBER INDUSTRY

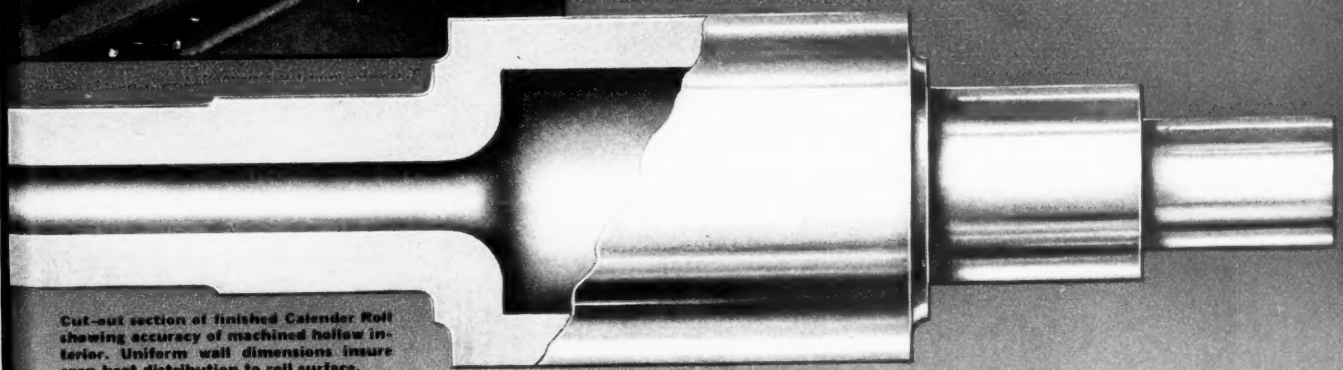
Machining interior of UNITED Calender Roll.



ALL TYPES...ALL SIZES ... for WASHERS, CRACKERS, REFINERS, MILLS, CALENDERS.

There is a UNITED ROLL for every natural or synthetic rubber processing requirement. And because the perfection of UNITED ROLLS is the result of more than 30 years experience in roll design and manufacture for the rubber industry, you can be sure that their production is controlled by the most advanced technological processes. Hundreds of UNITED ROLLS are daily proving their superiority in outstanding rubber processing plants throughout the world.

When you are ready for roll renewals or specifications for new processing equipment, it will be to your advantage to consult with UNITED engineers.



Cut-out section of finished Calender Roll showing accuracy of machined hollow interior. Uniform wall dimensions insure even heat distribution to roll surface.

UNITED ENGINEERING and FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH, VANDERGRIFT, NEW CASTLE, YOUNGSTOWN, CANTON

Davy and United Engineering Company, Ltd., Sheffield, England

Dominion Engineering Works, Ltd., Montreal, P. Q. Canada

The World's Largest Designers and Makers of Rolls and Rolling Mill Equipment

TROUBLE? Gobs of It!

Yes—and there's trouble and plenty of it in your plant when the solvents you are using vary in uniformity from one shipment to another. For if there's one thing you've got to have in a solvent, it is *uniformity.*

Lack of uniformity, however, is one headache you can easily avoid. How? With SKELLYSOLVE. Uniformity in SKELLYSOLVE is assured by the Skelly method of refining it. Scientific, instrumented control of the process eliminates human error.

There is a type of SKELLYSOLVE that will meet your specific requirements. Shipment of that type you receive next week, or next summer, or next year, will have the characteristics identical with those of the SKELLYSOLVE you get today.

SKELLYSOLVE
in the
RUBBER INDUSTRY

There are six different types of Skellysolve which are especially adapted to various uses in the rubber industry, for making rubber cements, and for many different rubber fabricating operations. Skellysolve offers many advantages over benzol, rubber solvent gasoline, toluol, carbon tetrachloride, etc. It will pay you to investigate Skellysolve. Write today.

SKELLY OIL COMPANY
SKELLY
SILVER JUBILEE
THE NAME OF PETROLEUM PROGRESS

SKELLYSOLVE

SOLVENTS DIVISION, SKELLY OIL CO.
SKELLY BLDG., KANSAS CITY, MO.


NET WEIGHT 50 LBS.
40 KOSMOS 40
CARBON COMPANY, INC.
U. S. A.
40 KOSMOS 40
MADE IN U.S.A.

KOSMOS 40

This latest furnace-process reinforcing carbon black (HMF type) for synthetic and natural rubber possesses a combination of most desirable characteristics—

- cool mixing
- easy processing
- smooth and rapid extrusion
- fast rate of cure
- full reinforcement
- low heat build-up
- high resiliency
- high resistance to cut growth, flex cracking and abrasion.

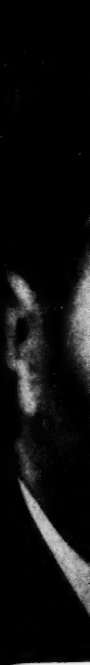
Kosmos 40 is especially useful for tires of all types, pneumatic or solids, under any conditions; tubes, bogie wheels; footwear; and mechanical goods.

Try a 50-50 blend of Kosmos 40 and channel black for tread stock to secure better plasticity. It will make it possible for you to dispense with one milling and thus—which is so important now—INCREASE YOUR OUTPUT.

RESEARCH DIVISION

UNITED CARBON COMPANY, INC.

Charleston, West Virginia



DAVI

Hidden assets for a thousand products

"From just one basic source, Hercules Powder Company has extracted a whole series of specialized products widely used in paints, varnishes, lacquers, soaps, insecticides, electrical insulators, linoleum, ink, plastics, detergents, adhesives, cement, rubber, paper coating. Only by long years of painstaking research has Hercules been able to develop the complex field of terpene and rosin chemicals."

DAVID DIETZ, *Science Editor of Scripps-Howard Newspapers, Author, Pulitzer Prize Winner*

EXTRA STAMINA FOR CONCRETE. Vinsol* resin helps keep concrete surfaces smooth and long-wearing. Interground with cement, it enables concrete to withstand scaling and corrosion due to frost and thaw and the action of ice-removing agents.

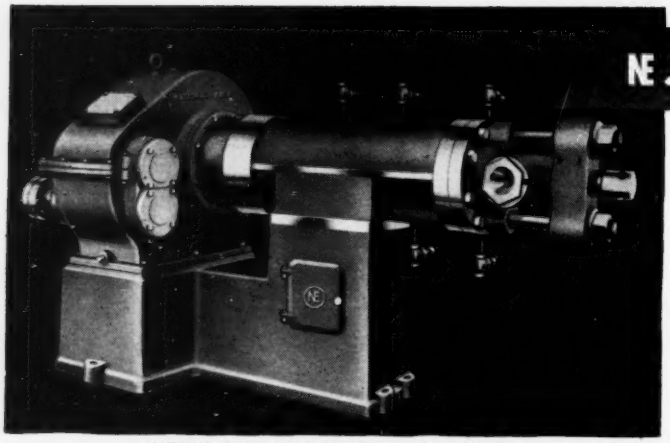
STRETCHING RUBBER SUPPLIES is one of Hercules' contributions toward rubber conservation. Solvenol* is used as a penetrant, softener, and swelling agent in the reclaiming of scrap rubber. It is now under allocation for this war task.

CLOSE SHAVE FOR PIGS. In packing plants, pigs are coated with a special resin, Brisgo*. When the Brisgo, applied hot, has cooled and congealed, it is peeled off like a banana skin and with it comes every hair and all the stubble.

RESIN AGAINST THE SEA. Pentalyn* resin permits use of domestic linseed instead of unobtainable foreign oils in making the tough, salt-water-resistant protective coatings essential to our ship-building program. Makes *more* paint with *less* critical materials.

*Reg. U. S. Pat. Off. NI-43A

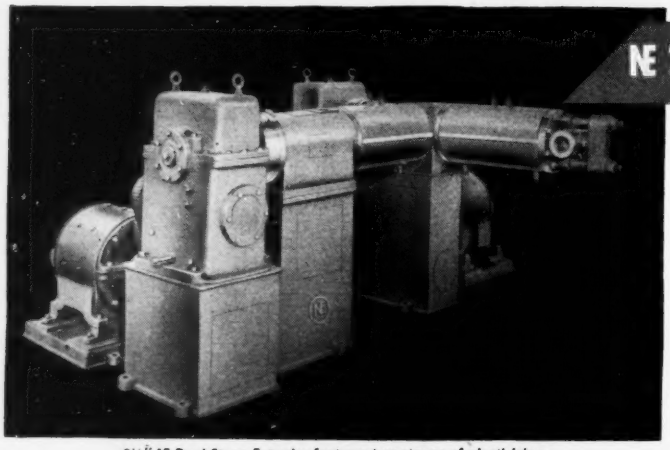
HERCULES POWDER COMPANY
INCORPORATED
914 MARKET STREET, WILMINGTON 99, DELAWARE



3½" NE Single Stage Extruder with two zones of heating

NE *Single* STAGE EXTRUDERS

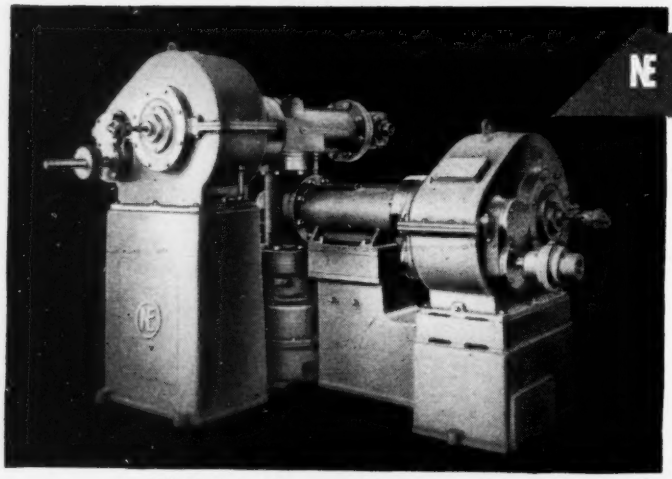
are widely used where materials are readily plasticized. Illustrated is a 3½" Resin Extruder with special cylinder construction and two zones of controlled heating.



3½" NE Dual Stage Extruder features two stages of plasticizing and four heat control zones

NE *Dual* STAGE EXTRUDERS

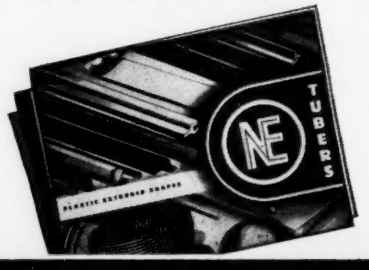
were developed to meet special material characteristics. National Erie, as a pioneer builder of extrusion equipment for rubber products, has developed special extrusion machines for plastics users. The dual extruder illustrated is a very recent development.



4½" NE Triple Stage Extruder with five heat control zones

NE *Triple* STAGE EXTRUDERS

represent the very latest thought and design and are being developed to meet the most severe conditions of plasticizing. The triple stage extruder shown is used on vital war work and features a compact independent drive on each stage and progressive controlled heating.



Write for Booklet

NATIONAL ERIE CORPORATION
Erie, Pa. U. S. A.

NEVILLE

NEVILLE CHEMICALS

Serving the RUBBER INDUSTRY

NEVOLL*

Coal-tar softener, formerly widely used in natural rubber, now found to be an effective plasticizer and wetting agent for GR-S to improve resistance to abrasion, tensile strength, elongation and resilience.

COUMARONE RESINS

A number of Rubber Reserve Company's releases on compounding synthetic rubbers contain suggested recipes calling for coumarone resins. They are available in various melting points and colors.

DIBUTYL PHTHALATE

Effective softener for several of the synthetic rubbers, such as Hycar OR, Perbunan, etc., imparting high tensile, low modulus and low set.

RECLAIMING OILS

Several types manufactured for both digestor and pan processes.

COAL-TAR SOLVENTS

Benzol, Tollac* Solvent, Nevsol*, Xylol, 2-50-W* Hi Flash Solvent, Cosol*, and special solvents; for rubber cements and various rubber solutions.

R-9

*Reg. U. S. Pat. Off.

THE NEVILLE COMPANY

PITTSBURGH · PA.

Chemicals for the Nation's War Program

NEVILLE SALES AGENTS TO THE RUBBER INDUSTRY

U. S. A. (other than Mass. and R. I.), Canada, Mexico

CHARLES T. WILSON CO., INC.

United Bldg., Akron, O. 120 Wall St., New York

Mass. and Rhode Island

T. C. ASHLEY & CO.

683 Atlantic Ave., Boston, Mass

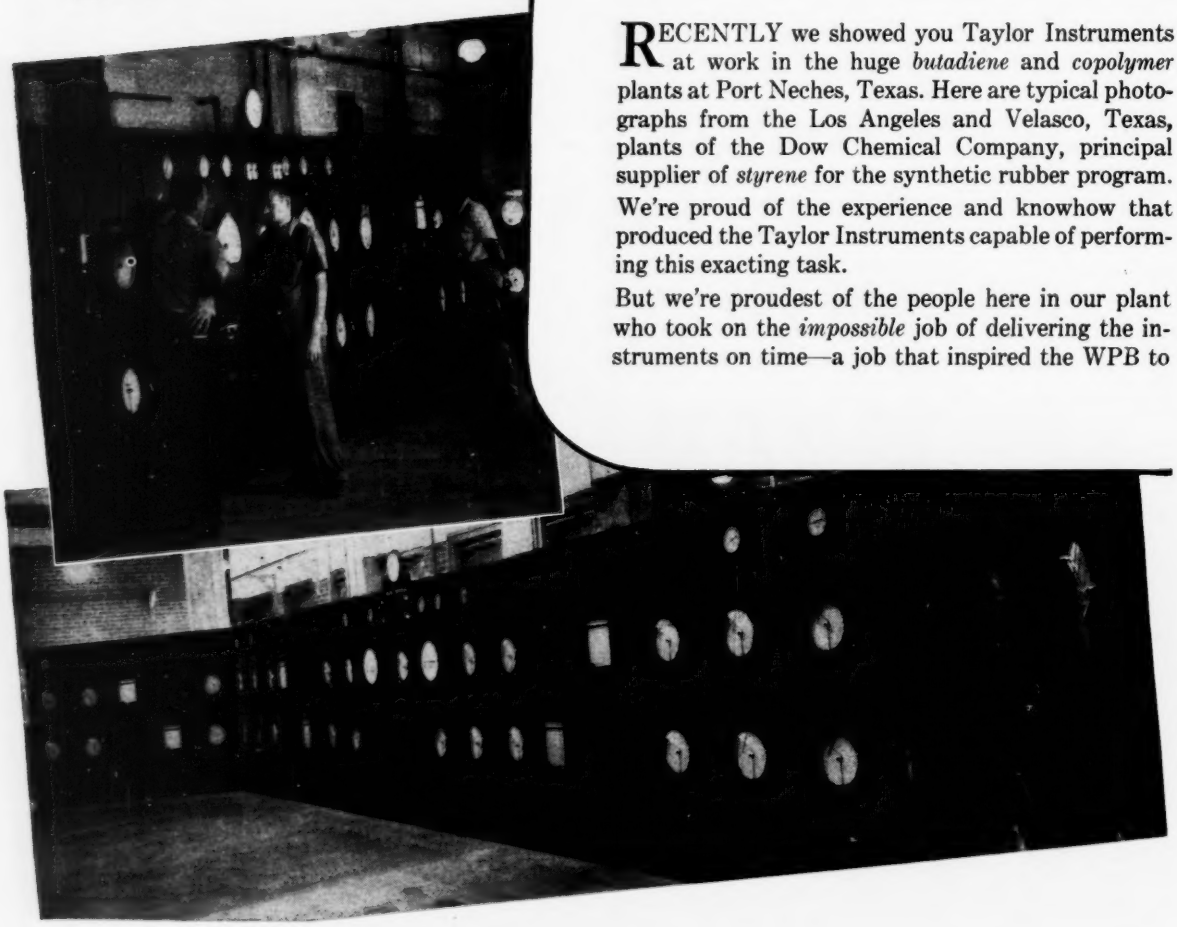
"Secret ingredient" makes synthetic rubber better and faster!

[Bu + Na + S + Taylor Accuracy = better synthetic rubber . . . on schedule !]

RECENTLY we showed you Taylor Instruments at work in the huge *butadiene* and *copolymer* plants at Port Neches, Texas. Here are typical photographs from the Los Angeles and Velasco, Texas, plants of the Dow Chemical Company, principal supplier of *styrene* for the synthetic rubber program.

We're proud of the experience and knowhow that produced the Taylor Instruments capable of performing this exacting task.

But we're proudest of the people here in our plant who took on the *impossible* job of delivering the instruments on time—a job that inspired the WPB to



tell us, "The age of miracles has not yet passed!" If you could visit these Dow styrene plants, you would see:

TAYLOR RATE-OF-FLOW PNEUMATIC TRANSMISSION SYSTEMS involving the following . . .

Taylor Aneroid Flow Recorders and Controllers (hundreds of them). The controllers with **Automatic Reset;** some with **Taylor Pneumatic Set.**

TAYLOR TEMPERATURE PNEUMATIC TRANSMISSION SYSTEMS with

Taylor Fulscope Recording Temperature Controllers (scores of them), with **Automatic Reset,** and **Pre-Act** (corrects according to *rate* of control point deviation). The mercury actuated temperature systems having

Taylor Accuratus Tubing (compensated for ambient temperatures), and

Taylor Thermospeed separable well constructions.

TAYLOR MERCURY TYPE FLOW RECORDERS

TAYLOR FULSCOPE RECORDING PRESSURE CONTROLLERS with **Automatic Reset**

TAYLOR MERCURY-IN-GLASS INDUSTRIAL THERMOMETERS, with **Binoc Tubing**

In short, you'd see better than we can tell you how Taylor can do a job for *you!* Taylor Instrument Companies, Rochester, N. Y. and Toronto, Canada. *Instruments for indicating, recording, and controlling temperature, pressure, humidity, flow and liquid level.*

BUY MORE BONDS ...AND KEEP THEM!

Taylor Instruments

MEAN

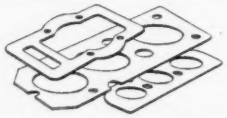
ACCURACY FIRST

IN HOME AND INDUSTRY

Consult the **UBS** *Laboratories on special Bonding, Coating and Impregnating Problems!*

No matter what the problem may be — *bonding neoprene, rubber and other coated or moulded parts to any ferrous or non ferrous metal; corrosion proofing chemical tanks and equipment; laminating leather belting; coating magneto parts; combining or coating fabrics; impregnating paper; cementing various materials together; insulating wire and other articles; etc.* — you will find the UBS Laboratories equipped to provide the one best formula to suit your needs. Longtime specialists in the field of industrial Bonding, Coating, and Impregnating Compounds, the UBS Laboratories not only know thoroughly the compounding advantages and limitations of all the latest synthetics, but even have developed an original synthetic latex and synthetic rubber of their own. *Write today, describing your Bonding, Coating, or Impregnating Problems.*

UBS developed adhesives are being used in the manufacture of inflatable Army and Navy Equipment, where weather- and chemical resistant seams of high tensile strength are required.



UBS developed compounds are being successfully used to coat magneto parts and for cementing gaskets, where oil resistance is of great importance.

UBS developed adhesives and coating compounds are being widely used on Army delousing bags, protective clothing, etc., where acid resistance and flame resistance are of paramount importance.

UBS developed compounds are being used for chemical tank linings and to corrosion proof chemical handling equipment, where acid resistance and alkali resistance are primary factors.

Address all inquiries to the Union Bay State Chemical Company, Rubber Chemicals Division, 50 Harvard Street, Cambridge 42, Massachusetts.

UBS

UNION BAY STATE *Chemical Company*

Serving Industry with Creative Chemistry

ORGANIC CHEMICALS · SYNTHETIC LATEX · SYNTHETIC RUBBER
PLASTICS · INDUSTRIAL ADHESIVES · DISPERSIONS
COATING COMPOUNDS · IMPREGNATING MATERIALS · COMBINING CEMENTS

MEETING THE MEASURE OF YOUR PROCESSING REQUIREMENTS

WITCO BLACK #12 ... an extremely easy processing black of lower hysteresis than standard channel blacks. It is readily compounded without affecting the tensile, modulus or elongation, and is being used with highly satisfactory results in natural, synthetic and reclaim rubber processing. Witco Black No. 12 is a product of exceptionally uniform particle size, produced under rigid control at the Witco Panhandle Plant. It may be the solution to your compounding problem. Why not talk it over with one of our technical representatives?

WITCO CHEMICAL COMPANY MANUFACTURERS AND EXPORTERS

[FORMERLY WISHNICK-TUMPEER, INC.]

295 MADISON AVENUE, NEW YORK 17, N. Y. • BOSTON • CHICAGO • DETROIT • AKRON • CLEVELAND • LONDON

A NEW BLACK "MAGIC"

Continex SRF

SEMI-REINFORCING FURNACE BLACK

Here at Continental's new New Furnace Black Plant, full scale production is now under way.

Continex SRF is a superior semi-reinforcing furnace type black . . . providing greater strength and loading capacity . . . giving the rubber a higher rebound resilience and longer service life.

Your orders for Continex SRF will be filled promptly.

CONTINENTAL CARBON COMPANY
MANUFACTURER
[CONTINENTAL CHANNEL AND FURNACE BLACKS]

WITCO

WITCO CHEMICAL COMPANY
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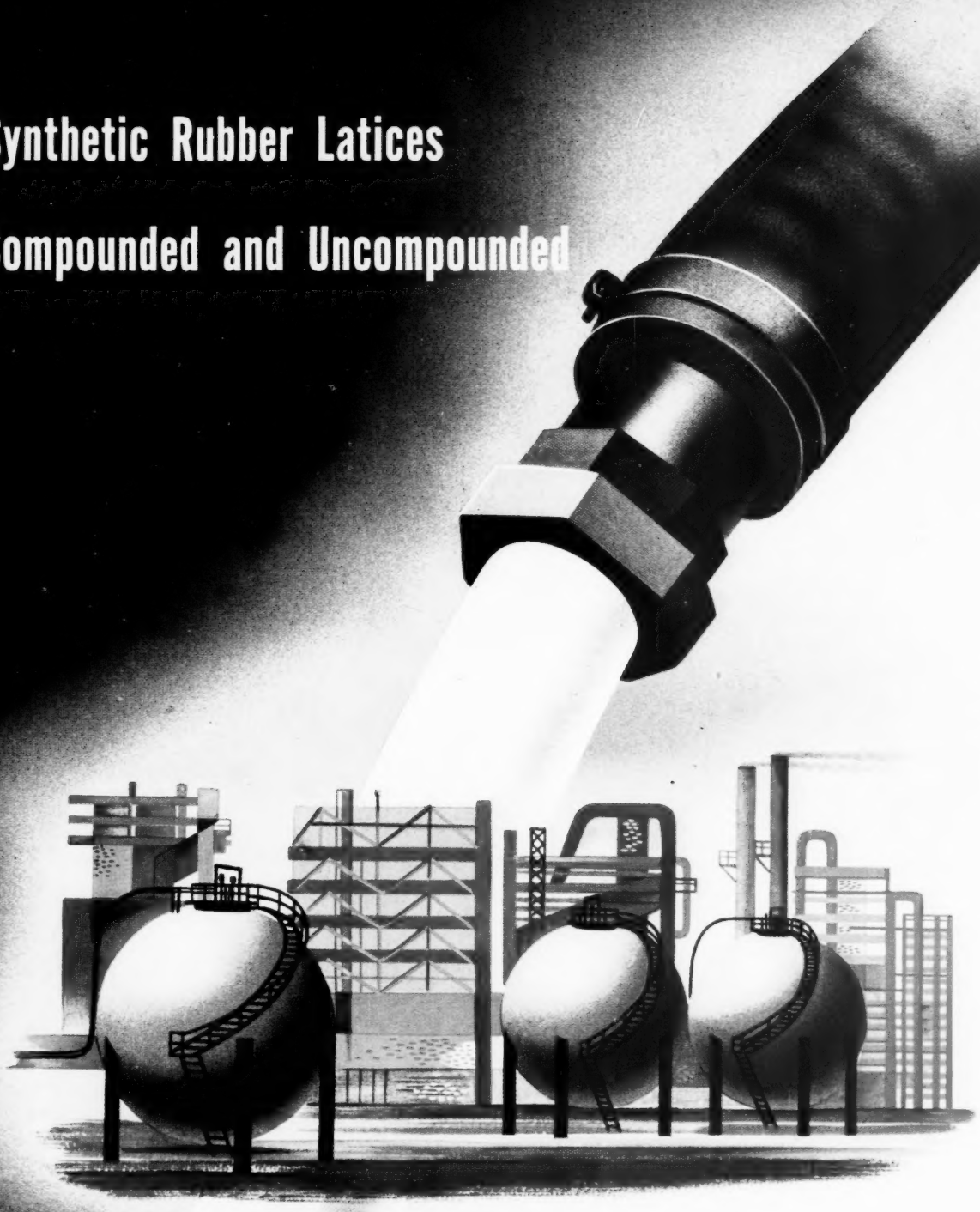
Synthetic Rubber Latices

Compounded and Uncompounded



Naugatuck Chemical

DIVISION OF UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE, NEW YORK 20, N. Y.

In Canada: **DOMINION RUBBER COMPANY, LTD., MONTREAL**

IMPORTANT FIRST STEPS

To Great Developments!

BEFORE full strides in production are possible, every product must pass through the first painstaking steps of laboratory research and pilot plant testing. Success at these critical stages of development depends much upon fine or "special" chemicals of unvarying quality and purity. While only small amounts may be required at first, *large quantities* are often necessary for full scale manufacture.

The furnishing of such fine and "special" chemicals for industry is a familiar and widely-known service of the Baker & Adamson Division of the General Chemical Company.

. . . Baker & Adamson has long been recognized for the exceptionally high standards of purity maintained in the manufacture of its laboratory reagents and fine chemicals. Today new and expanded facilities *increase still further its capacity for producing such chemicals in industrial quantities!*

Why not plan now with Baker & Adamson and be sure of having the fine or "special" chemicals for every step of your product development when you need them?

GENERAL CHEMICAL COMPANY

Fine Chemicals for Industrial America

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK 6, N. Y.

Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh Providence (R. I.) • St. Louis • Utica (N. Y.)

Pacific Coast Technical Service Offices:
Los Angeles • San Francisco • Seattle, Wenatchee and Yakima (Wash.)

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

Why take a chance on "Locking Open"?

Revolutionary Crown Zipper "two-way" track makes Crown the world's safest, most dependable zipper!

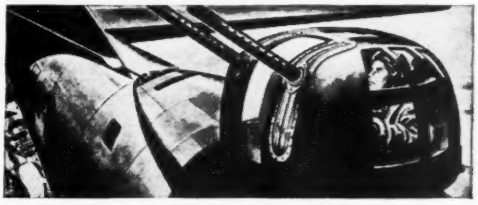
What happens when an ordinary zipper comes open *behind* the slider? Often the zipper must be replaced — and sometimes the article to which it's attached.

But Crown Zippers are different. Even if the teeth *do* come apart behind the slider, there's no harm done. In two quick zips the slider can be moved backward along the track, then forward again, closing the entire track perfectly!

This is made possible by Crown's exclusive tooth construction. Both sides of each individual zipper tooth are identical, making Crown the world's *only* zipper with a smooth "two-way" track! And this is but one of *five* advantages Crown Zippers have over old-style zippers. (See complete listing below.)

That's why you can be sure that Crown Zipper applications on postwar rubber goods will give unfailing service — will zip smoother, further, faster, more securely!

Moreover, when you turn to postwar, Crown engineers, fresh from their experience in redesigning hundreds of military items, will adapt—or, if necessary, *create*—special zipper applications to meet special jobs.



Crown's new "double-acting" zipper provides opening wherever needed with smooth closures in both directions.

CROWN

ZIPPERS

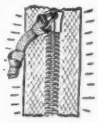
are 5 ways better

1. Takes sharp curves

2. Die-cast for smoother action—extra strength

3. Provides opening wherever you want it

4. Won't lock open



5. Resists corrosion

Member of the J. & P. Coats • Clark's ONT *Family*

THE SPOOL COTTON COMPANY • *745 Fifth Avenue, New York, N. Y. (Crown Fastener Division)*

Unfinished Business!

• Behind the door of America's chemical industry is being conducted one of science's most important pieces of unfinished business—the exploration of coal-tar.

Already this war has given impetus to a host of amazing new coal-tar developments.

Niacin, in the Vitamin B Complex . . . many of the new life-saving sulfa drugs . . . scores of compounding materials, helping to make possible our vitally essential synthetic rubber industry . . . DDT . . . and finally, one of the most notable of modern chemical syntheses—the exact duplication of the complex quinine molecule.

For the even more memorable advances to be anticipated in the future, Barrett stands ever available as a key source of supply for coal-tar chemicals. If you are working on any problems involving coal-tar, or any of its derivatives, Barrett invites your inquiries.

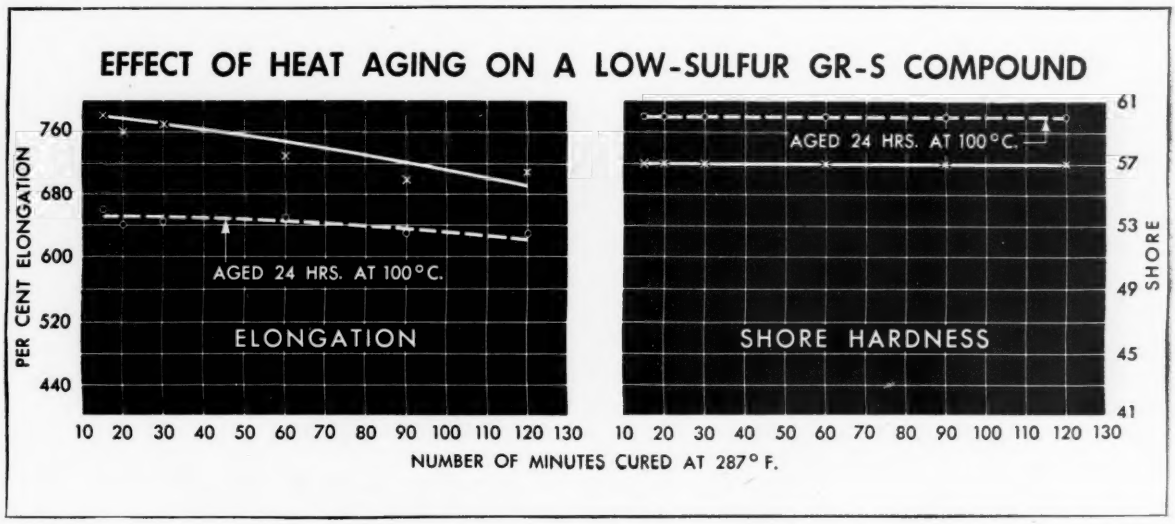
THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

BARRETT COAL-TAR CHEMICALS: Tar acids: Phenols, Cresols, Cresylic Acids, Naphthalene • Phthalic Anhydride • Dibutyl Phthalate • Pyridine Cumar* (Paracoumarone-indene Resin) • Rubber Compounding Materials • Bardol* • Barretan* • Pickling Inhibitors • Benzol • Toluol • Xylol • Solvent Naphtha, Hi-Flash Solvent • Hydrogenated Coal-Tar Chemicals • Flotation Agents • Tar Distillates • Anhydrous Ammonia • Ammonia Liquor • Ammonia Nitrate • Sulphate of Ammonia • Arcadian*, the American Nitrate of Soda.

*Reg. U. S. Pat. Off.

ONE OF AMERICA'S GREAT BASIC BUSINESSES

Barrett



Physical Properties of GR-S Compounds Stay Put with New Low-Sulfur Formula

Heat resistance now made practical by F.B.S LITHARGE

FORMULA

GR-S (Institute)	100
E.P.C. Carbon Black	40
Sulfur	0.75
Zinc Oxide	3.0
Benzothiazyl Disulfide	1.0
F.B.S. Litharge	1.5
Coaltar softener	5

Data:

Time 287° F.	Tensile Strength	% Elong.	Modulus 300% Elong.	Shore Hardness
15	2890	780	640	57
20	3010	760	660	57
30	3090	770	660	57
60	2960	730	660	57
90	2850	700	685	57
120	2960	710	700	57
Aged 24 Hours at 100° C				
15	2970	660	980	60
20	3030	640	1020	60
30	2980	645	1000	60
60	3260	650	1040	60
90	3060	630	1130	60
120	2930	630	1040	60

OUTSTANDING CHARACTERISTICS:

The F.B.S. Litharge-thiazole combination used with low sulfur is characterized by the following:

1. Heat stability • **2.** Fast curing rate • **3.** High flat modulus **4.** Excellent general physical properties • **5.** Processing safety **6.** Efficiency • **7.** Economy.

High retention of physical properties . . . how important is that to you?

Your GR-S can have it, merely by changing to a low sulfur formula.

Now such a compound can be cured in a practical time and without extra quantities of accelerator.

F.B.S. Litharge plus benzothiazyl disulfide is what produces safe, fast cures with low sulfur content.

The curing period can be varied from 15 to 120 minutes with scarcely any effect on elongation, hardness or modulus.

Moreover, the effect of aging on samples cured for various periods is almost uniform.

Reference to the accompanying tables and charts should be convincing.

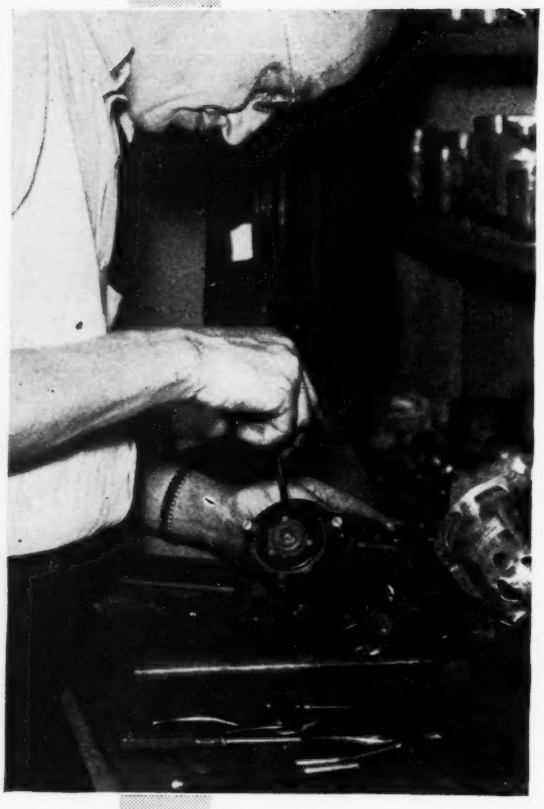
• • •

Ask us to send you a printed report, "Compounding of GR-S for Heat Resistance," issued by the Rubber Division of our Research Laboratories, which covers the subject of F.B.S. Litharge for low sulfur formulas in greater detail and from a number of additional angles. Write to

NATIONAL LEAD COMPANY

Rubber Division: 105 York Street, Brooklyn, N. Y.

New York, Buffalo, Chicago, Cincinnati, Cleveland, St. Louis, San Francisco; Boston (National-Boston Lead Co.); Pittsburgh (National Lead & Oil Co. of Penna.); Philadelphia (John T. Lewis & Bros. Co.).



his SKILL maintains Equipment that cannot be replaced

This engineer's experience has not come from being a *manufacturer* of the equipment he services . . . Years of study and work maintaining and restoring the efficiency of vacuum cleaners gave him a specialized skill that *saved* thousands of irreplaceable machines . . . There is no monopoly on skill. The maintenance of equipment ranging from watches to locomotives depends upon the skill of men who "know how" from years of specialized experience . . . So, too, have the men at Interstate developed a skill in the rebuilding of Banbury Mixers that is of unquestioned value to the Rubber Industry. Our specialized experience has given us the "know how" to rebuild such equipment properly for maximum efficiency. Our facilities and responsibility have been fully adequate to satisfy the largest and most critical representatives of the Industry.

SERVING THE RUBBER INDUSTRY

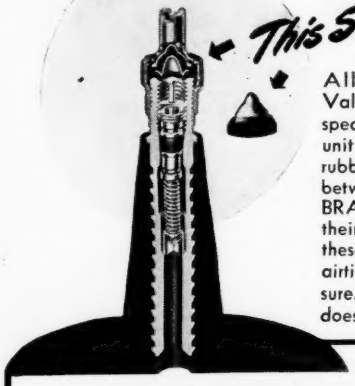
INTERSTATE WELDING SERVICE

Main Plant: 914 Miami Street . . . AKRON 11, OHIO . . . Phone: JE 7970

EXCLUSIVE SPECIALISTS IN BANBURY MIXER REBUILDING

OR-

THIS?



← This Seals the Air!

All Standard Schrader Valve Caps contain this specially designed sealing unit with a dome-shaped rubber washer vulcanized between two dome-shaped BRASS plates. Because of their unique construction, these caps are guaranteed airtight up to 250 lbs. pressure. This mighty midget does the work.

MR. & MRS. AMERICA

Today your tires may seem good for many more miles—but don't let underinflation ruin them; check them now. Inflate if necessary. And be sure a Schrader Valve Cap is on every tire including the spare—screwed down fingertight. It's mighty cheap insurance for longer tire life.

YOU wouldn't use a camel if your tires gave out? Maybe not—but you'll wish you had one if you cannot get the new tires you need. It will be some time before there will be enough tires to supply everyone. So save your present ones by keeping them properly inflated.

What's so important about correct inflation? Just this. A popular sized tire *underinflated only 6 pounds,* loses 30% of its potential mileage.

Protection against underinflation is easy. Check pressure regularly. Put air in tires when needed, and seal that air in. That's important. SEAL that air in. The Schrader Valve Cap does it. Applied firmly, these caps provide an airtight seal up to 250 pounds pressure—more than you'll ever need. So when you inflate tires, be sure a Schrader Cap is on every valve, including the spare.

Schrader Caps are available in the familiar red, white and blue package wherever gas or tires are sold—or tires are serviced.

Schrader
REG. U.S. PAT. OFF.
CONTROLS THE AIR

NEXT TIME YOU GET GAS

Get Air—Get AIRTIGHT CAPS

SOLD EVERYWHERE

A. SCHRADER'S SON, *Division of Scovill Manufacturing Company, Incorporated,* BROOKLYN, NEW YORK

DIELEX

(COMPOUNDED GILSONITE)

AND

DIELEX-ALBA

(SYNTHETIC WHITE WAX)

TWO ORGANIC DIELECTRICS FOR USE IN WIRE INSULATION COMPOUNDS

EASY PROCESSING
LOW WATER ABSORPTION
HIGH MODULUS

LOW CAPACITANCE
LOW POWER FACTOR
HIGH RESISTIVITY

READILY AVAILABLE

HERRON BROS. & MEYER

82 Beaver Street, NEW YORK 5, N. Y.
516 Ohio Bldg., AKRON, OHIO

feathering the nest for after-war sales . . .

Better qualities for finished products . . . That is the objective now with a new purpose back of it . . . It is the objective that will feather the nest for after-war sales of countless products. RESINEX is helping many to meet that objective — and meet it with reduced production costs. Here is why: It is an extender-plasticizer that smooths out the compound for easier handling and fast, clean-cut extrusion; it provides oil and grease-resisting properties, greater resistance to tear and abrasion, better elongation, better tensile strength and greater resistance to flex-cracking. If you are looking for improved product performance you will be interested in the laboratory facts about RESINEX. Write for them — and for samples to make test runs.

RESINEX

STANDARD *Chemical Company*

General Offices: AKRON 8, OHIO

SPECIALISTS

in the manufacture of machinery for

THE RUBBER INDUSTRY

ALSO GENERAL MACHINE WORK

★

We are listing some of the LABOR SAVING machines that we manufacture as follows:

TIRE BUILDING DRUMS AND MOLDS
for all sizes and types of tires

BAND BUILDERS
with squeegee applicators

MECHANICAL PRESSES
200 - 400 - 750 ton sizes

TIRE BUILDING MACHINES

The Akron Standard Mold Co.
Akron — "The Established Measure of Value" — Ohio

SULPHUR and CHEMICALS FOR THE RUBBER INDUSTRY

CRYSTEX INSOLUBLE SULPHUR

Commercial Rubbermakers' Sulphur, Tire Brand, 99½% Pure
Refined Rubbermakers' Sulphur, Tube Brand, 100% Pure
Carbon Tetrachloride, Carbon Bisulphide
Caustic Soda, Sulphur Chloride

Stauffer CHEMICALS SINCE 1885

STAUFFER CHEMICAL CO.

420 Lexington Ave., New York 17, N. Y.
444 Lake Shore Drive, Chicago 11, Ill.
624 California St., San Francisco 8, Cal.
555 So. Flower St., Los Angeles 13, Cal.
424 Ohio Building, Akron 8, Ohio
North Portland, Oregon
Houston 2, Texas
Apopka, Florida

Technical Bulletin No. 2

The Compounding of GR-S with Substantial Loadings of Zinc Oxide

THE results with Mercaptobenzothiazole, as shown in our last Technical Bulletin, may be further improved — especially with respect to pendulum rebound (hysteresis) and heat generation—by increasing the major accelerator, and employing a secondary accelerator with the sulfur content reduced slightly.

Extra Light Calcined Magnesia and "Cumar MH 2½" remain important constituents of the compound, although evidence is accumulating that the former may be reduced still further and the latter may be replaced with other materials.

COMPOUND No. 2	
GR-S	100.0
Sulfur	3.5
Mercaptobenzothiazole	1.75
D.O.T.G.	0.15
E.L.C. Magnesia	5.0
Cumar MH2½	7.5
Zinc Oxide*	100.0

*Kadox Black Label-15 was used in this compound. Other brands of Zinc Oxide may be substituted with corresponding results. Some adjustment in the accelerator — sulfur ratio may be required in the case of a slow-curing brand (XX Red 4). More data on this subject will be available later.

ORIGINAL RESULTS

Time of Cure Min. at 45 Lb.	Tensile Strength Lb./Sq. In.	Per Cent Elongation	Load (Lb./Sq. In.) For Elongation of		Permanent Set
			200%	300%	
7.5	1120	335	600	920	.09
15	1320	335	600	1080	.11
30	1195	320	700	1070	.11
45	1110	310	635	1070	.07
60	1170	325	685	1050	.07
90	1240	310	680	1120	.09
120	1050*	425	285	445	.14
180	1020*	370	415	680	.10

*The data for the 120 and 180 minute cures were obtained about a week after the initial results on remilled stock. This may account for the erratic elongation and modulus data.

Time of Cure Min. at 45 Lb.	Shore Hardness	Goodyear-Healy Pendulum		Compression Fatigue (Goodrich Flexometer)*					Cut-Growth Resistance Inches Failure at 13,000 Cyc.
		Indentation in mm.	Per Cent Rebound	Per Cent Initial Comp.	Running Time and Per Cent Permanent Set	Max. Temp. Rise °C.	Dynamic Compression		
							Initial	Final	
90	52	8.00	66.4	19.3	15′-2.5	11.9	11.3	11.9	0.71

*Test Conditions: 100 Lb. Load. 0.15″ Stroke. 100°C. Oven Temp.

This compound has a much more advanced "state-of-cure" than Compound 1 as indicated by the Elongation and Permanent Set which is reflected in a 12% increase in Pendulum Rebound and a reduction in Temperature Rise in the Goodrich Flexometer of 8°C., but the cut-growth resistance has been impaired. Tight cures, of course, tend to improve hysteresis and heat generation and affect cut-growth adversely. It is necessary under such circumstances to compromise, depending on the relative importance of the properties sought.

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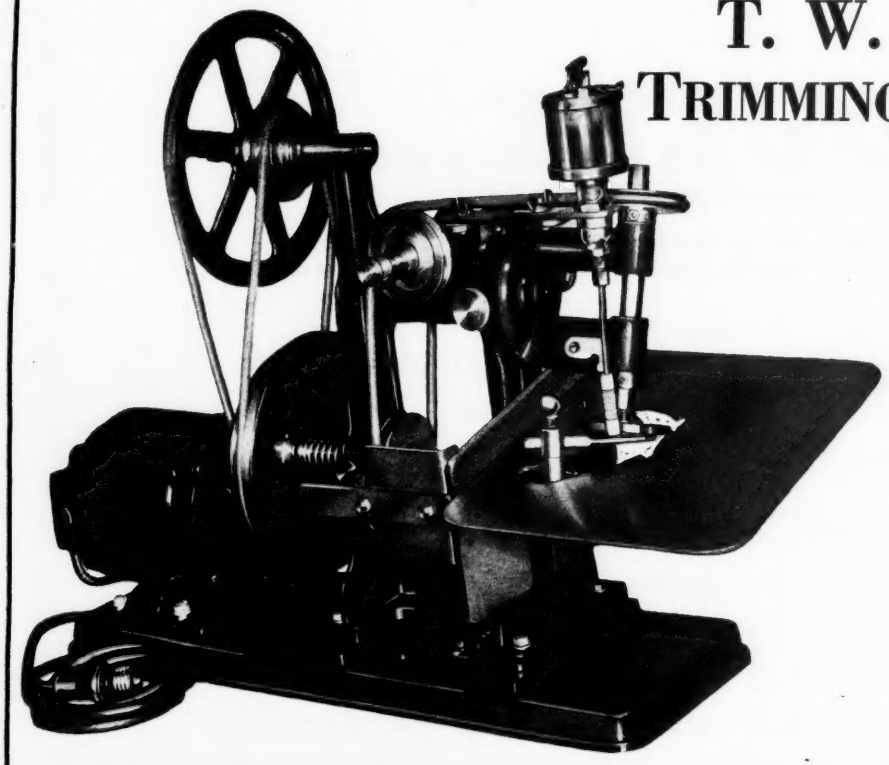

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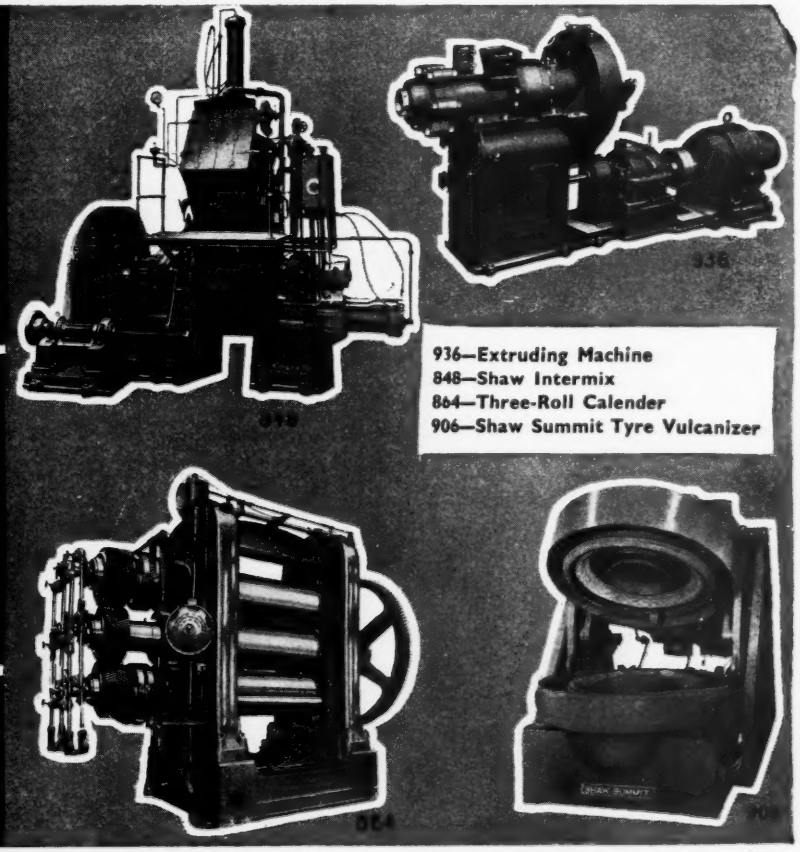

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R. 111

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Volume 110 Number 6

A Bill Brothers Publication

INDIA
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NATURAL & SYNTHETIC

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Published at 386 Fourth Avenue, New York, N. Y.

Volume 110 **New York, September, 1944** **Number 6**

Polyester-Type Elastomer from Smilax Rotundifolia Seeds

A. R. Kemp[1] and Henry Peters[1]

ABOUT five years ago the elastic skins covering smilax seeds were called to the authors' attention by J. A. Elder, of the United States Department of Agriculture Experimental Gardens at Chapman Field, Cocoanut Grove, Fla. The *Smilax* rotundifolia, Linn or Horse-Brier, which grows wild at Chapman Field and is commonly found in the south, is shown in Figure 1. The berries are blue-black when ripe and usually contain three seeds which are round and about 0.5-centimeter in diameter. When the berries are crushed in the fingers, the seeds can be easily separated from the pulp. Over each seed is found a tightly fitting elastic skin that can be removed by pinching the seed to force it out of the skin. (See Figure 2.) It is this strong highly elastic skin that the present article is intended to describe. Some physical properties of the skins are given in Table 1.

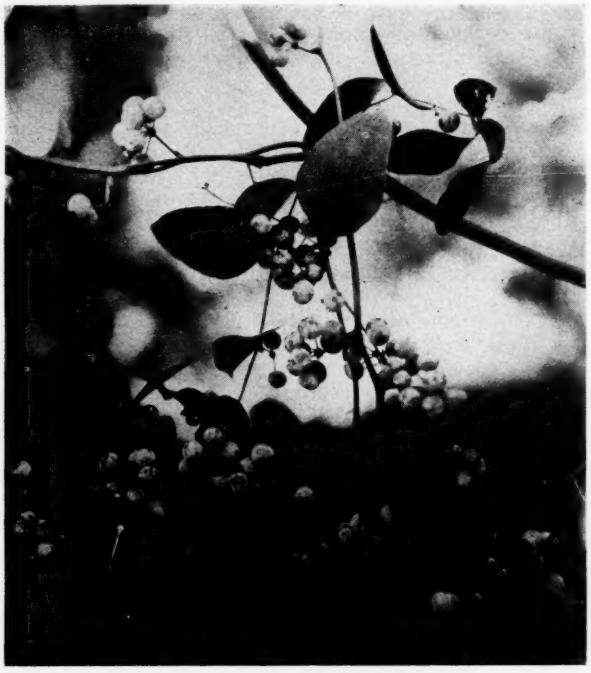


Fig. 1. Smilax Rotundifolia Plant

Fig. 2. Stretched Skins over Smilax Seeds

TABLE 1. PHYSICAL PROPERTIES OF ELASTIC SKINS

Color	Colorless and transparent when freed from pulp
Odor	Odorless
Thickness	About 0.003-centimeters
Diameter of Skin	About 0.5-centimeters
Weight	About 0.001-gram
Elongation at Break	300 to 400%
Density	Approximately 1.02
Tensile Strength and Modulus	High as judged by hand test
Brittleness Temperature	Lower than—78° C.

In order to note the nature of these skins their behavior was observed when placed in various solvents. These observations are given in Table 2.

The swelling behavior of the skins shown in Table 2 suggests a polymeric material of polar nature instead of

[1] With Bell Telephone Laboratories, Murray Hill, N. J.

a pure hydrocarbon. Lack of solubility indicates cross-linking of polymer chains.

TABLE 2. SWELLING OF SKINS IN VARIOUS SOLVENTS

Swelling Medium	Swelling in 10 Minutes	Swelling in 24 hours
Water	None	None
n-hexane	None	None
Paraffin oil	None	None
Ethyl alcohol	Slight	Moderate
Benzene	Slight	Moderate
Acetone	Moderate	Considerable
Ethyl ether	Moderate	Moderate
Carbon tetrachloride	Moderate	Moderate
Chloroform	Considerable	Considerable
Glacial acetic acid*	Considerable	Considerable

* Greatest swelling in the order of 1000%

Chemical tests were carried out showing the substance of the skins to be free from sulphur, halogens, and nitrogen. No evidence of unsaturation could be noted. The material burned with difficulty, producing a non-luminous flame. A combustion analysis was made on the skins which had been very carefully freed from pulp and washed. In another case the skins, after cleaning in water, were extracted with acetone for 1½ and three hours. The total extract amounted to 6.1%. These data are given in Table 3.

TABLE 3. COMBUSTION ANALYSIS OF SKINS

Sample Treatment	% Carbon	% Hydrogen	% Oxygen by Difference
1. Cleansed in water and dried	69.09	10.45	20.46
2. Cleansed in water followed by acetone extraction 1½ hrs.	69.39	10.30	20.31
3. Cleansed in water followed by acetone extraction 1½ hrs.	69.30	10.34	20.36
4. Cleaned of pulp by washing in 10% sodium carbonate (skins partly hydrolized)	69.81	10.53	19.66

Hydrolysis of Skin Substance

Since it was noted that the skins dissolved in warm alcoholic potassium hydroxide, this action was taken as evidence that the material was an ester. In view of this, experiments were conducted to determine the nature of the hydrolytic products resulting from refluxing with normal alcoholic potassium hydroxide.

TABLE 4. HYDROLYSIS EXPERIMENTS

Sample Weight Grams	Cubic Centimeters of N. KOH Used	Time of Reflux Hours	Saponification Equivalent	% Yield of Acid upon Neutralization	Neutralization Equivalent of Pure Acid
0.25	3	0.25	Not det.	Not det.	328.2*
0.40	5	3	252	64.3	332.7†
1.00	5	6	271	68.2	Not det.

* Highly purified acid, melting point 91° C.
† Acid as first thrown down and washed.

TABLE 5

Preparation	% Carbon	% Hydrogen	% Oxygen by Difference
No. 1	65.69	10.36	23.95
No. 2	64.99	10.79	24.22
Theory for $C_{18}H_{34}O_5$	65.40	10.38	24.22
Theory for $C_{18}H_{36}O_5$	65.00	10.92	24.08

Hydrolysis experiments were conducted on 0.25- to one-gram samples of the washed skins. The time of hydrolysis was varied from 15 minutes to six hours. After hydrolysis the solution was titrated with standard 0.1 normal hydrochloric to determine the saponification equivalent. A small excess amount of hydrochloric acid was then added until no further precipitation of the acid present occurred. The acid was filtered out, and its yield based on the weight of the skins taken was recorded. Some loss occurred in this operation. The acid was then purified by repeated crystallization from hot dilute ethyl alcohol upon gradual cooling to 0° C. The data from the hydrolysis experiments are given in Table 4, and the combustion analyses of the purified acid are given in Table 5.

The filtrate from the first precipitation of the acids was extracted with ether and 13.9% of an acid similar in appearance to the principal acid and having a neutralization equivalent of 340.6 was obtained. In another experiment the filtrate from the main acid was evaporated to dryness and extracted with absolute alcohol followed by ethyl ether; the ether yields 29.6% of a brown resinous viscous liquid having a peppery odor. No further investigation of this substance was made except that tests indicated that it contained some of the main acid.

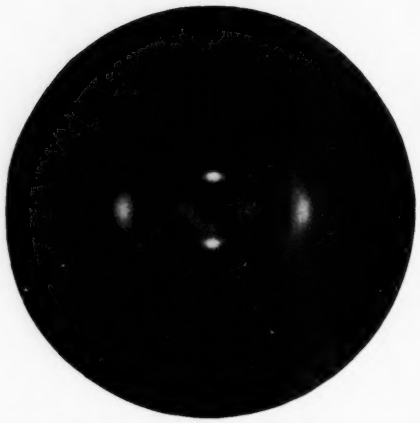


Fig. 3. X-Ray Pattern of Oriented Smilax Seed Skins

X-Ray Study of Elastomer

The authors are indebted to W. O. Baker and N. R. Pape, of these Laboratories, for the results of their X-ray investigation described herein.

X-ray patterns from unstretched smilax membranes revealed a moderately ordered system immediately distinguishable from the typical amorphous scattering produced by ordinary natural resins or gums. It was, therefore, not surprising that an elongated section displayed typical fiber orientation in the X-ray diagram. (See Figure 3.)

The pattern is evidently dominated by strong equatorial spots corresponding to a spacing of 4.28Å, and by intense meridian reflections from a spacing of about 11.07Å. Weaker diffraction features include equatorial spacings of 2.5Å, a meridian of 5.72Å and outer layer-line arcs indicating 2.2Å spacing (these arcs do not show on the X-ray reproduction). It seems likely that the meridian reflections are the second and fourth orders of a chain identity period spacing, of which the layer-line arcs may also be the ninth order. Thus, from the II_o spots, the period, I, would be 22.14Å; from the IV_o spots, I = 22.88Å; while, as expected from uncertainties in their measurement, a somewhat shorter period is deduced from the IX_o (II_1) arcs.

Considerable further study is needed for interpretation of these preliminary observations, but they do suggest approximately a polar chain structure, leading to crystallinity with polar coordination.[2] Most likely, chain sections are joined with ester linkages, and if these chain sections are predominantly composed of methylene groups, eight or nine chain atoms between polar layers may be indicated.

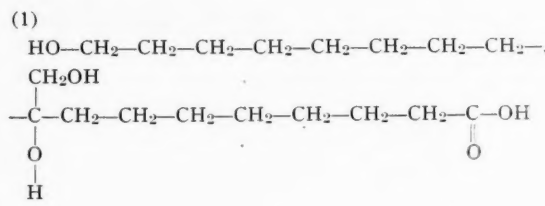
Discussion

Although the structure of the elastomer has not been proved, the chemical and X-ray data point toward a repeating unit having 17 or 18 carbon atoms in the chain with two hydroxyl side groups. Upon hydrolysis a hydroxy

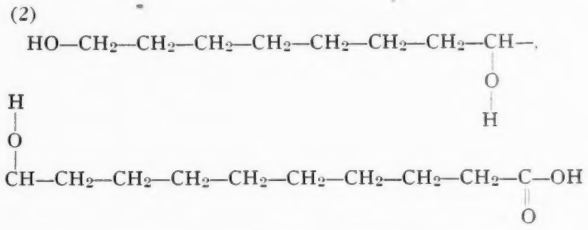
[2] Baker and Fuller, *J. Am. Chem. Soc.*, 64, 2399 (1942); *J. Chem. Ed.*, 20, 3 (1943).

acid apparently is produced, the exact structure of which has not been determined. However the following two structures of $C_{18}H_{36}O_5$ are offered merely to point toward certain possibilities which would agree with the present known facts.

(1)



(2)



It is of interest to note that Churt and Hausser[3] separated pentadecane-15-hydroxy-1 carboxy acid, melting point 95° C., from Juniper. They also described a series of normal hydroxy acids having from seven to 21 carbon atoms. The melting points of these acids ranged from 58° to 98° C. The acids with the odd number of carbon atoms melted about 6 degrees lower than the preceding even carbon atom acid. The general characteristics of the normal 18 carbon atom *acids* in terms of solubility, waxlike nature, and physical characteristics were very similar to the main acid which the present authors derived from *smilax*.

From the present work it appears that about 20% of the hydrolytic products from smilax seed skins has a somewhat different composition and is composed of liquid constituents. If the composition of the main hydroxyacid in Table 5 from smilax is compared with the composition of the skins in Table 3, it is seen that the carbon hydrogen ratio of the two substances is distinctly different. The composition of the skins correspond closely to that of the main acid $C_{18}H_{36}O_5$ minus one molecule of water of hydrolysis as shown below.

	Carbon	Hydrogen	Oxygen by Difference
Composition of whole smilax seed skins	69.34	10.32	20.34
Theory for $C_{18}H_{34}O_4$	69.17	10.33	20.50

It appears that the liquid substance may also be acids, and they might have resulted from splitting of the main acid during hydrolysis.

In conclusion it appears that nature has fashioned a most interesting substance to cover smilax seeds. This polyester covering probably serves to keep moisture in the seed during the dry season, and when the seed is exposed to moisture and warmth, the authors have noted that the pulp in the berry surrounding the seed ferments, and the acid condition accelerates the natural hydrolysis of the skin, and the skin is removed allowing the seed to germinate.

It is of interest to note that the first synthetic polyesters were announced by Carothers and Arvin in 1929.[4] Later Biggs and Fuller[5] announced rubber-like polyesters prepared by vulcanizing certain copolyesters with benzoyl peroxide.

It is hoped that the present study will assist others in showing how the properties of a polymer such as the rubber-like elastic smilax seed covering is closely related to a unique structure. Although the composition of this substance points strongly toward it being a condensation product of a hydroxy acid $C_{18}H_{36}O_5$, further work will be necessary to elucidate completely the exact polymeric structure of this most interesting substance. Whether cross-linking is present or the substance is simply an extremely high molecular weight polyester is unknown. The lack of solubility indicates the possibility of some cross-linking. Hydrogen bonding may play a part in the lack of solubility of this unique polyester.

[3] *J. Helv. Chem. Acta*, 12, 463-92 (1929).
[4] *J. Amer. Chem. Soc.*, 51, 2560 (1929).
[5] *Chem. & Eng. News*, June 25, 1943, p. 962.

New Mill for Guayule Project

Construction on a new guayule processing mill at Bakersfield, Calif., which will incorporate operating improvements resulting from extraction research during the past two years,[1] is expected to begin in the early autumn. Capacity of the mill on a 24-hour-day basis will be 30 or more tons of shrub. Funds for the mill were included in the $5,420,000 Congressional appropriation, which also provided $81,000 for continuation of *Cryptostegia* research and allocations for improving the existing guayule mill at Salinas, Calif., and for continuing plant investigations and extraction research. No additional planting was included in the program. Milling will shortly be resumed at Salinas after installation of improvements has been completed.

Intermittent milling at Salinas during the past 18 months produced 620 long tons of rubber from mature shrub from a small acreage of United States fields and some shrub from wild stands. The fall 1944 milling schedule will utilize for the first time on a commercial scale the shrub planted in 1942-43 by the Emergency Rubber Project. It is estimated that about 600 long tons of rubber will be produced by the end of the normal harvesting and milling season in the late Spring of 1945, based on a rubber content of the dry weight of the shrub of 8-9%. Planned operations for the season involve the harvesting of 5% to 6% of the present 31,400 acres of guayule plantations.

Production of rubber from young plantations is being instituted this year to begin adding to the crude rubber supply in a small way as early as possible. The shrub will have been in the plantations between two and three years.

Current investigations of shrub retting and storage are being conducted with the hope of evolving a procedure of shrub storage during the non-harvesting season that will permit virtually continuous milling throughout the year. Funds have been assured for continuance this year, but the more remote future of the project is a matter of conjecture.

Plans have been prepared whereby approximately 26,000 long tons of guayule rubber may be processed from existing acreage. Whether or not this total amount will ever be produced is dependent upon future appropriations by Congress. The Office of the Rubber Director recommended holding the present plantings until at least June 30, 1945.

[1] "Recovery of Rubber from Young Guayule Shrub." INDIA RUBBER WORLD, Feb., 1944, p. 475.

Hazards of Organic Solvents

H. P. Quadland[1]

SINCE the majority of organic solvents may be used at one time or another, in one way or another, in the manufacture or utilization of synthetic rubber, rubber-like materials, and rubber cements, there is little possibility that the problem of hazards in connection with their many uses can ever be boiled down to concrete formulae. A solvent that may be safe in one operation may be hazardous in another; while the relative toxicities of a number of solvents in widespread use for 50 years or more are still being argued.

All organic solvents are toxic to some degree, and some are flammable as well. But all organic solvents can be used safely if sufficient effort is concentrated on controlling whatever hazard may be faced.

The accompanying table gives, for a number of solvents, the Underwriters' Laboratories flammability rating, starting at 0 for carbon tetrachloride and certain other chlorinated hydrocarbons which are non-flammable, and going up to 110 for carbon disulphide, which is very flammable; also the flash point, relative volatility, ignition temperature, vapor density, lower explosive limit, and the maximum allowable concentration of vapor in the atmosphere acceptable to various agencies, for continuous (eight-hour daily) exposure.

[1] Safety Research Institute, Inc., 420 Lexington Ave., New York, N. Y.

Symptoms of Exposure to Vapors

Early symptoms of hazardous exposure to the vapors of organic solvents are essentially the same for all the solvents. They include headache, nausea, dizziness, unusual lethargy, gastrointestinal disturbances, loss of appetite, nervousness, smarting of eyes, etc. If any of these symptoms occurs continuously in connection with known exposure to any solvent, there is need of investigation by the medical staff and the safety engineering department. Of course many of

(Continued on page 646)

FLAMMABILITY AND TOXICITY (M. A. C.) OF CERTAIN* ORGANIC SOLVENTS

Solvent	U. L. Flammability Rating	Flash Point (° F.)	Relative Volatility (Ether=1)	Ignition Temperature (° F.)	Vapor Density (Air=1)	Lower Explosive Limit (% by Volume)	Maximum Allowable Concentration for Eight-Hour Daily Exposure (Parts per Million of Air)†
Acetone	90	0	2.1	1,000	2.00	2.55	200 (California)
Amyl acetate	55–60	77	15.0	750	4.49	1.1	400 (in some states)
Amyl alcohol	35–40	114	62.0	650	3.04	1.2	.....
Benzine	95–100	0	3.5	....	4.48	1.1	1,000
Benzol	95–100	—4	3.1	1,000	2.77	1.55	100 (A. S. A.)
Butyl acetate	55–60	72	12.0	790	4.00	1.7	400 (in some states)
Butyl alcohol	40	100	33.0	700	2.55	1.7	200
Isobutyl alcohol	....	82	24.0	800	2.25	1.7	.....
Butyraldehyde	....	20	....	....	2.48	....	.....
Carbon disulphide	110	—22	1.8	212	2.64	1.0	20 (A. S. A.)
Carbon tetrachloride	0	Non-combustible	3.0	Non-combustible	5.32	Non-explosive	100
1-chloro-1-nitropropane	....	102	....	....	....	....	.....
Crotonaldehyde	....	55	....	....	2.41	2.9	.....
Cyclohexane	....	1	3.1	....	2.90	1.3	.....
Cyclohexanol	....	154	400.0	....	3.45	....	.....
Denatured alcohol	70	60	....	750	1.60	....	.....
Dibutyl ether	....	77	....	....	4.48	....	.....
Dichlorobenzene	....	151	57.0	....	5.10	....	75
1, 1-dichlorethylene	....	57	....	850	3.35	5.6	100 (Kentucky)
Diethyl benzene	....	138	....	....	....	....	.....
Diethyl cellosolve	....	95	....	....	....	....	.....
Ethyl acetate	....	24	2.2	800	3.04	2.2	.....
Ethyl alcohol	70	55	8.3	700	1.59	3.5	250 (in some states)
Ethyl benzene	....	59	....	....	3.66	....	.....
Ethyl ether	100	—49	1.0	356	2.56	1.85	400 (in some states)
Ethylene dibromide	0	Non-combustible	33.0	None	5.72	Non-explosive	.....
Ethylene dichloride	....	58	4.1	775	3.42	6.2	100
Ethylene oxide	....	below 20	....	804	1.52	3.0	.....
Gasoline	95 to 100	—45	3.5	495	3 to 4	1.3	1,000 (Petroleum solvents may vary in toxicity according to their source; chemical analysis needed to determine toxicity)
Isopropyl alcohol	55 to 60	59	21.0	700	2.07	2.0	.....
Isopropyl benzene	....	97	....	....	....	....	.....
Isopropyl ether	....	15	....	....	....	....	.....
Kerosene	40	100 to 165	....	490	....	....	1,000
Mesityl oxide	....	90	....	....	....	....	.....
Methyl acetate	....	14	2.2	850	2.56	4.1	.....
Methyl alcohol	70	52	6.3	800	1.11	6.0	200 (A. S. A.)
Methyl isobutyl ketone	....	73	12.0	....	3.45	1.2	.....
Methylene chloride	....	(approx.) None (at ordinary temperature)	1.8	....	5.37	....	.....
Monochlorbenzene	....	81	12.5	....	....	....	75
1-nitrobutane	....	115	....	....	....	....	.....
Nitroethane	....	82	....	....	....	....	.....
Nitromethane	....	95	....	....	....	....	.....
1-nitropropane	....	93	....	....	....	....	.....
2-nitropropane	....	75	....	....	....	....	.....
Petroleum ether	95 to 100	—69	3.5	475	2.50	1.4	.....
Propylene dichloride	....	63	....	1,035	3.89	3.4	.....
Solvent naphtha	(A mixture of benzol, toluol, and homologs)						
Stoddard's solvent	30 to 40	100 to 110	....	450	....	1.1	.....
Tetrachlorethane	0	Non-combustible	....	Non-combustible	....	Non-explosive	10
Tetrachlorethylene (perchlorethylene)	0	Non-combustible	....	Non-combustible	5.72	Non-explosive	200
Toluol	75 to 80	40	6.1	1,026	3.14	1.27	200 (A. S. A.)
Trichlorbenzene	....	212	....	....	....	....	.....
Trichlorethylene	1 to 2	None (at ordinary temperature)	3.8	....	4.53	None (at ordinary temperature)	200
Turpentine	40 to 50	95	....	464	....	.08	200
Xylene	....	63	13.5	900	3.66	1.0	200 (A. S. A.)

* For many of the newer solvents, no flammability ratings have as yet been assigned by the Underwriters' Laboratories.
† The M. A. C. is as listed in "Manual of Industrial Hygiene", U. S. Public Health Service, unless otherwise indicated.

Compounding Neoprene Latex—III

Mixtures with Plastic Materials

B. Dales,[1] H. H. Abernathy,[1] and R. H. Walsh[1]

THERE are many places in industry where manufacturers have a choice of either elastomers or plastics in making finished articles. This is particularly true in the making of proofed, impregnated, or combined goods. A natural consequence of such overlapping usefulness is a widespread interest in plastic-elastomer mixtures—an interest mainly centered in the hope of finding a combination which would exhibit the good qualities of both. Usually plastics and elastomers are mixed in the dry form; however, for many purposes, such as for combining and adhesive cements or certain types of dipped goods, aqueous dispersed or latex systems are of greatest interest.

Neoprene Latex Type 571 is a general-purpose synthetic latex. Most published information[2] concerning it has been of a practical nature describing conventional-type compounds. It is possible, however, to prepare mixtures of it with resins or with chemicals capable of reacting to form resins. Properly cured films from such mixtures sometimes have characteristics not obtainable or difficultly obtainable in films from the usual neoprene latex compounds. The characteristics, for instance, high hardness and lowered swell in solvents, imparted by the resins are gained in most cases at the expense of some elastic property, thus limiting the usefulness of the compounds. It is believed, however, that in spite of this behavior chemists will find the mixtures described valuable as starting points in the development of formulations which will broaden the utility of aqueous dispersions of elastomers.

Addition of Resin-Forming Chemicals

It has long been known that substances such as phenol and formaldehyde, when added under proper conditions to rubber latex, will react to form resins which impart novel properties to dried films from the latex. The imparted properties are usually very different from those obtained when the phenol and formaldehyde are reacted prior to addition to the latex. Assuming that neoprene latex would act in a manner similar to rubber latex, the writers decided to add resin-forming reactive chemicals to it and attempt to cause them to polymerize or condense within the dried films.

A base formula having the following dry composition was prepared in the usual manner.

BASE I

Neoprene from Type 571 latex	100.0
Hard clay	10.0
Zinc oxide	5.0
Neozone D	2.0
Sulphur	12.0
Aquarex D	4.0*

* One half added to base and one half to the resin-forming chemicals.

A comparatively large quantity of sulphur was used in an effort to provide catalysis for the resin reactions. This seemed permissible since films from this base mixture were not greatly different from those from a similar compound without sulphur (Base II subsequently shown). It was necessary to use four parts of Aquarex D in order to stabilize the resin-latex mixtures. Acidic catalysts could not be used because they would cause the latex to coagulate. The Base I mixture was diluted to 40% solids, and resin-forming reactive chemicals, as subsequently indicated, were added. Test films were prepared from the latex compounds by the coagulating dip method, using a coagulant consisting of 10 parts calcium nitrate tetrahydrate, 10 parts desiccator grade calcium chloride, 25 parts acetone, and 75 parts methanol by weight. Holding times for the dips into the latex compounds were adjusted to produce films about 0.02-inch thick. A.S.T.M. methods were used in testing for stress, tensile strength, elongation at break, permanent set, and volume increase in solvents. Hardnesses were determined with the Shore A Durometer.

Rosin was added as a 20% emulsion prepared by dissolving 20 parts of FF wood rosin in 32 parts toluol, adding 1.6 parts oleic acid, and emulsifying this mixture by stirring it at high speed into 1.6 parts triethanolamine, 12.8 parts 10% ammonium caseinate solution, and 32 parts distilled water. Urea, resorcinol, catechol, salicylic acid, para-formaldehyde, phthalic anhydride, cresol, and cyclohexanone were added as 10% aqueous solutions, emulsions, or dispersions. Technical 37% formaldehyde was used.

Test results, as shown in Table 1, were obtained.

[1] With E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
[2] Dales, Abernathy, and Walsh reports 43-2, BL-44, BL-73, BL-74, BL-75, BL-116, BL-127, issued by du Pont rubber chemicals division, Wilmington. Abernathy, *Rubber Age* (*N. Y.*), 52, 125 (1942). Dales, Walsh and Abernathy, INDIA RUBBER WORLD, Mar., 1943, pp. 565-67; and May, 1943, pp. 146-47.

TABLE 1. PHYSICAL TEST DATA OF FILMS FROM COMPOUNDS CONTAINING RESINS FORMED IN PLACE

Chemicals Added to Base I	Shore Hardness	Stress at 300% P.S.I.†	Tensile at Break P.S.I.	Elongation at Break %	Volume Increase—48 Hrs. at 100° C. in Water %	Volume Increase—48 Hrs. at 100° C. in Kerosene‡, %	Permanent Set %	Shore Hardness	Stress at 300% P.S.I.†	Tensile at Break P.S.I.	Elongation at Break %	Volume Increase—48 Hrs. at 100° C. in Water %	Volume Increase—48 Hrs. at 100° C. in Kerosene‡ %	Permanent Set %
	Films Cured 60 Minutes at 140° C.							Films Cured 15 Minutes at 190° C.						
A. None—Control	52	150	4050	920	98	89	14	66	150	3475	790	54	75	10
1. Rosin 4 pts., resorcinol 2 pts.	66	450	3290	800	222	76	23	75	1325	1325	100	31	26	5
2. Urea* 2 pts., formaldehyde 2 pts.	60	400	3450	760	133	74	20	84	1275	1275	100	16	20	3
3. Salicylic acid 2 pts., formaldehyde 2 pts.	54	200	1975	950	60	92	30	88	....	1350	90	28	26	2
4. Resorcinol 1 pt.	56	400	2850	780	120	89	22	74	325	600	110	54	34	3
5. Resorcinol 2 pts., cyclohexanone 2 pts.	55	325	3200	810	108	78	18	66	225	675	220	167	40	5
6. Resorcinol 2 pts., p-formaldehyde 2 pts.	55	275	3025	825	179	69	20	67	400	900	160	178	31	4
7. Resorcinol 2 pts., phthalic anhydride 2 pts.	66	175	1650	865	80	73	23	71	150	1325	330	64	41	9
8. Resorcinol 2 pts., cresol 2 pts.	66	325	3600	775	106	71	21	73	425	1100	180	142	34	6
9. Resorcinol 1 pt., catechol 1 pt., formaldehyde 2 pts.	67	625	3825	820	99	50	12	71	425	1450	230	161	52	8

* Films soaked 30 minutes in glacial acetic acid immediately after forming. † Pounds per square inch. Throughout this paper English units are used.
‡ The kerosene had an aniline point of 146 ± 0.5° F.

TABLE 2. DESCRIPTION OF PRODUCTS

Number	Name	Type	Supplier	Physical Form	How Added to Base II
I	Polyvinyl acetate	Polyvinyl acetate	du Pont	60% aqueous emulsion	As received + diethanolamine to make alkaline
II	Melantine salt	Melamine-formaldehyde (?)	Ciba	Powder	25% aqueous solution
III	Uformite 414	Urea-formaldehyde	Resinous Products	Solution	As received
IV	Plyophen 5011	Phenolic	Reichhold Chem.	Solution	Diluted 3 to 1 with water
V	Plyophen 5015	Phenolic	Reichhold Chem.	Solution	Diluted 3 to 1 with water
VI	Duraplex C-50LV	Alkyd	Resinous Products	Viscous liquid	33% aqueous emulsion
VII	Paraplex X-100	Alkyd	Resinous Products	Solid	20% aqueous emulsion
VIII	Lauxite 840-75	Urea-formaldehyde	Lauxite Corp.	Grains	20% aqueous solution
IX	High pH casein	Protein	Sheffield-By-Prods.	Grains	10% ammoniacal aqueous solution
X	15 cps. Methocel	Methylcellulose	Dow	Fibers	10% aqueous solution
XI	Neolyn 40	Rosin-alkyd	Hercules	Balsamic	50% aqueous emulsion

TABLE 3. PHYSICAL TEST DATA OF FILMS FROM COMPOUNDS CONTAINING COMMERCIAL RESINS

Resins Added to Base II	Films Cured 60 Minutes at 140° C.							Films Cured 15 Minutes at 190° C.						
	Shore Hardness	Stress at 300% P.S.I.	Tensile at Break P.S.I.	Elongation at Break %	Volume Increase—48 Hrs. at 100° C. in Water %	Volume Increase—48 Hrs. at 100° C. in Kerosene %	Permanent Set %	Shore Hardness	Stress at 300% P.S.I.	Tensile at Break P.S.I.	Elongation at Break %	Volume Increase—48 Hrs. at 100° C. in Water %	Volume Increase—48 Hrs. at 100° C. in Kerosene %	Permanent Set %
A. None—Control	51	225	3800	880	104	93	5	53	275	4050	870	91	89	4
10. Lauxite, 1 pt.; Methocel, 1 pt.	55	475	3225	920	42	86	14	57	500	2550	775	459	65	8
11. Lauxite, 5 pts.; Methocel, 5 pts.	73	825	3125	895	6	82	38	70	800	3025	840	9	69	25
12. Lauxite, 5 pts.; Methocel, 5 pts.; SRF Black, 30 pts.	89	1150	2075	750	0.6	71	40	84	1350	1900	520	3	50	26
13. Polyvinyl acetate, 15 pts.	65	650	1225	695	85	90	19	..	....	....	....	..	..	..
14. Melantine salt, 25 pts.	46	125	3500	1045	114	86	19	43	100	2600	900	190	79	16
15. Uformite 414, 25 pts.	50	175	3100	1050	105	108	27	49	200	2200	930	222	77	26
16. Plyophen 5011, 5 pts.	56	400	3400	780	45	72	11	61	775	3250	670	35	75	15
17. Plyophen 5015, 5 pts.	48	75	3200	860	85	85	5	47	100	3250	880	117	85	5
18. Duraplex C-50LV, 30 pts.	30	....	725	1090	20	85	10	..	....	....	....	..	..	..
19. Paraplex X-100, 30 pts.	42	....	650	780	8	82	15	..	....	....	....	..	..	..
20. Lauxite, 25 pts.	53	150	3225	840	99	78	11	46	150	3550	870	81	85	12
21. Casein, 15 pts.	75	700	4125	880	6	83	17	..	....	....	....	..	..	..
22. Methocel, 30 pts.	94	....	1425	80	7	50	35	87	1100	1300	460	7	52	33
23. Neolyn 40, 10 pts.	44	75	2525	1160	20	103	15	..	....	....	....	..	..	..

In all cases, except the control, there were large differences between the films cured at 140° C. and those cured at 190° C. The differences were most noticeable in elongations at break. Some of the films had lower moduli at 300% when cured at 190° C.; while others were very much higher than for corresponding 140° C. cures. These facts may indicate that the reactions to form resins take place slowly, if at all, at 140° C. Films from 1, 2, 3, 6, and 8 cured at 190° C. had properties resembling those of flexible hard rubber. All 190° C. cured films, except those from the control and 9, were more resistant to swelling in kerosene than were films cured at 140° C. In the case of 1, 2, 3, and 4 there was a similar reduction in swell in water. The lower permanent sets of the films cured at 190° C. were assumed to be due either to better cure or to resin formation.

In addition to the data shown it was noticed that films from most of the latex compounds containing resin-forming reactive chemicals adhered tightly to many types of surfaces such as cotton fabric, wood, and stone.

Results with Commercial Resins

In view of the results obtained with resin-forming chemicals it was decided to try a number of commercial resins. For these trials no effort was made to select representatives of all types of products, nor should the reader gain the impression that better results would be obtained with the described materials than with others of the same class. Manufacturers' trade names are used for identification because the exact compositions of the products are trade secrets. A basic mixture having the following recipe was used for these trials.

BASE II

Neoprene from Type 571 latex	100.0
Hard clay	10.0
Zinc oxide	5.0
Neozone D	2.0
Aquarex D	0.5

Films were prepared and tests were performed as in the case of the chemical additions except that it was necessary to use films cast on glass plates instead of coagulating dip films for the compounds containing more than one part of Methocel and those containing casein.

The preparations used are described in Table 2. The physical test data obtained are summarized in Table 3. In the case of the Plyophen resins (compounds 7 and 8) no more than five parts per 100 parts of neoprene were used because of the limited compatibility between the latex and the resin solutions.

Compounds 11, 12, 18, 19, 21, 22, and 23 were swelled considerably less than the control after exposure to water while 12, 16, and 22 were more resistant to kerosene than the control. A comparison of the 190° C. and 140° C. cures of 10, 11, and 12 indicates that Methocel and Lauxite or a possible reaction product of the two is changed by exposure to the higher temperature. Many of the compounds produced films having high permanent sets. This fact probably limits their usefulness. The data illustrate the very wide range of physical properties which may be obtained through the use of resins. Some of the compounds may be of practical value, particularly those showing excellent resistance to swelling by water. The addition of fillers to certain of the compounds, such as 18 or 19, might improve their usefulness as might the addition of plasticizers to those showing high permanent set.

Summary

Neoprene films have been prepared which contained a variety of resins, both those derived from reactive chemicals and from commercial materials. Certain of these films resembled flexible hard rubber; others possessed excellent resistance to swelling by water. A wide range of physical properties was obtained through the use of different additives. Most of the films were deficient in some physical property, notably permanent set.

THE PRODUCTION OF TALC, PYROPHYLLITE, AND GROUND soapstone in 1943 was 436,249 short tons, compared with 403,801 short tons in 1942, according to reports to the Bureau of Mines, United States Department of the Interior. Sales increased from 387,963 short tons to 412,868 short tons in the same years. The rubber industry required 48,994 short tons in 1943, but 40,487 in 1942.

A Simplified Hot Tensile Test for GR-S[1]

H. A. Braendle,[2] E. Valden,[2] and W. B. Wiegand[2]

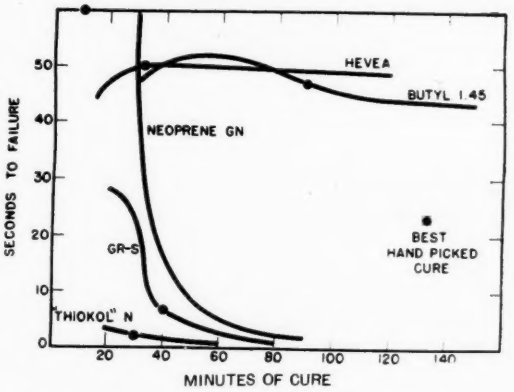


Fig. 1. Heat Failure of Various Rubbers with 27.8 Volumes of Carbon Black

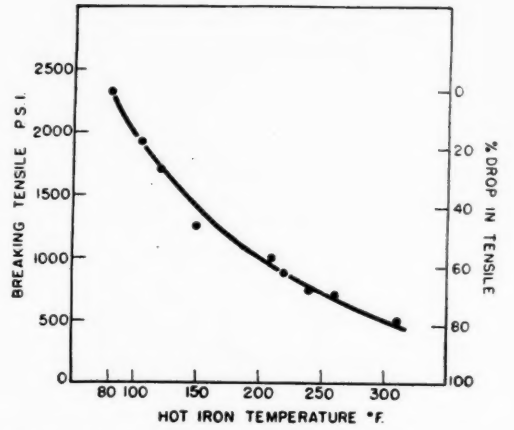


Fig. 3. Tensile of GR-S Tread Compound *vs.* Temperature

IN SEPTEMBER, 1942, the hot iron test developed by E. Valden, of these laboratories, was demonstrated[3] as a simple rapid method of evaluating the heat embrittlement of GR-S. The test specimen, a T-50 test piece, may be cut from the remnants of test sheets cured for stress-strain determinations. For GR-S treads a convenient set of conditions is 200% elongation and an iron temperature of 400° F.

The iron is fastened to the test block at a sufficient height to assure positive contact of the specimen with the iron, and the screws in the spacer blocks are set to give a 200% elongation.[4] The iron, a "patch heater", for spotting or dry-mounting photo prints, has a built-in thermostat. The time in seconds between contact of the specimen with the iron and its failure due to heat is recorded. The relative behavior of various elastomers with 27.8 volumes of carbon is illustrated in Figure 1. The excellence of *Hevea* at both optimum and prolonged overcure is apparent. The hot iron test does not serve to pick best cure. It does provide an effective warning against

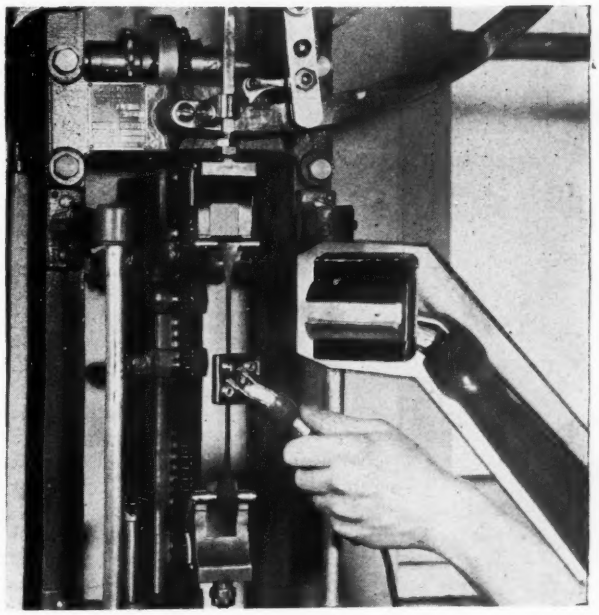


Fig. 2. Operation of Hot Iron Tensile Test; Insert Shows Groove Cut into the Iron to Take Straight Portion of Test Piece

overcure and a means of recognizing compounding changes which benefit heat stability, as, for example, the use of high carbon high softener ratios.[5]

The general recognition of the tenderness of hot GR-S has necessitated the emphasis on high temperature tests for all compounding studies. Few laboratories are equipped with the conventional types of hot tensile testers, and under present restrictions these are almost unobtainable. Improvisations have been developed. A modification of the hot iron test is possibly one of the simplest of these. As shown in the insert on Figure 2, a slightly crowned groove was cut into the face of the brass heel piece of the hot iron of sufficient width and depth to take the straight portion of a standard dumbbell test piece. The heel piece has a hole drilled parallel to this groove into which a thermocouple needle may be inserted for adjusting and checking the temperature of the iron.

In operation, the test specimen is mounted in the tensile tester in the standard manner, and the down pull started. The hot iron is then held against the center of the test strip as shown in Figure 2. As the sample is stretched, the iron is moved down to keep it centered between the standard bench marks. The effect of iron temperature on the WPB test tread is shown in Figure 3. A temperature of 200 to 220° F. produces a tensile drop of about 60%.

To permit comparison between conventional room temperature tensiles and hot tensiles of specimens cut from the same standard test sheet, the dimensions of the A.S.T.M. test strip die were modified. The end tabs only were shortened, reducing the total length of the speci-

[1] Paper presented at the Spring, 1944, meeting of Division of Rubber Chemistry, A. C. S., in New York, N. Y., on April 28.
[2] Columbian Carbon Co. Research Laboratories, 214—44th St., Brooklyn, N. Y.
[3] Demonstrated informally at the Buffalo meeting of the A. C. S., Sept., 1942.
[4] "The Improvement in Thermal Shortening and Fatigue (Cut Growth) of GR-S." Bulletin by Columbian Carbon Co., p. 12, May, 1943.
[5] "The Improvement in Thermal Shortening and Fatigue (Cut Growth) of GR-S Treads."

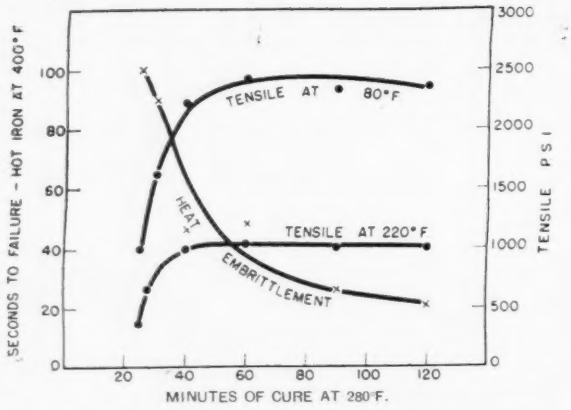


Fig. 4. Tensiles at 80° F. and 220° F. and Heat Embrittlement *vs.* Cure of a GR-S Tread

men by 5/8-inch, and the width of the end tabs narrowed by 3/8-inch. This left the length and width of the center portion of the test piece and the radii to the tabs unaltered and thus did not change the conventional tensiles from those obtained with the standard test strip die. By the use of this modified die ten specimens may be cut from a standard six-inch by six-inch test sheet as against a maximum of about six with the standard die. This makes it possible to break five test specimens at room temperature and another five at an elevated temperature, all from a single sheet.

Since hot tensile testing is frequently done by immersing the specimens into boiling water, a temperature of 220° F. was tentatively selected for the hot iron. This excess over the temperature of boiling water was an empirical allowance for the fact that the sample is not immersed into hot liquid. Conditioning the test piece in a Geer oven at 212° F. before determining the hot tensile with the iron showed no significant difference. Using this temperature, some data have been accumulated on hot tensile *vs.* room temperature tensile. It is not the purpose of this paper to discuss the effect of compounding variables on hot tensile, but in Figure 4 is shown a typical room temperature tensile, hot tensile, and hot iron or heat embrittlement curve for a GR-S tread compound. For this compound best hand-picked cure: namely, the best compromise between snap and tear, comes about ten minutes earlier than maximum room temperature tensile. Hot tensile is also shown to come slightly earlier than maximum room temperature tensile, thus approximating the best cure more closely. This is not universally true. Of 77 compounds tested, 32 cases showed maximum hot tensile at the same cure as maximum room temperature tensile; 33 cases showed earlier; and only 12 cases showed hot tensile later than room temperature tensile. It is thus seen that hot tensile tends to an earlier maximum than room temperature tensile, thus favoring cures with better tear and agreeing more closely with best hand-picked cure as defined above.

Since the specimen is heated by contact with the hot iron, a time factor is introduced. This must be recognized when comparing stocks of different degrees of reenforcement and consequently different modulus, since high modulus stocks will naturally build up considerable stress before the specimen is heated uniformly.

A comparison of results with the high temperature Scott tester showed very good correlation, and it is believed that a hot iron temperature of 230° F. will give hot tensile values for GR-S stocks, agreeing within experimental error with those obtained when the specimen is immersed into boiling water.

Hazards of Organic Solvents

(*Continued from page 642*)

the above symptoms may occur also from a hangover, insufficient nourishment, or a variety of other reasons, but in connection with exposure to solvents they may be significant.

Some individuals experience discomfort from solvent vapors at concentrations that have no effect on normal persons. Whether this is due to physical or psychogenic causes, lowering of the vapor concentration may aid these unusually susceptible people, but more common practice is to assign them to other work.

Dermatitis

Bodily contact with some solvents may remove the natural oils of the skin, leaving it dry and open to infection. These solvents are known as primary irritants. Others sensitize the skin, cause rashes, acne, etc. Full data on the solvents causing dermatitis may be obtained from the United States Public Health Service.

The Ohio Industrial Commission *Monitor* of October, 1943, lists 27 claims for compensation against a large synthetic rubber plant filed between November, 1942, and July, 1943. These give some indication of the incidence and distribution of dermatitis cases by occupation:

Occupation	Number of Cases
Janitor	9
Utility man	7
Solution mixer	3
Reactor helper	2
Chemical engineer	2
Painter	2
Mechanic	1
Chemist	1

Most of these cases were mild; in three, there was disability of more than seven days, two for nine, and the third for twelve. The dermatitis appeared chiefly on the exposed parts of the body, the hands, forearms, face, and neck, usually in the form of a rash with redness and perhaps small pimples, and occasionally with water blisters or small pustules.

It will be noted that janitors and utility men represented approximately 60% of the dermatitis cases listed above. Janitors, utility men, painters, and others who are not continuously employed on processes utilizing solvents should be thoroughly familiar with the hazards and be fully protected against them. Sometimes janitors or maintenance men will clean tanks or perform other special duties without having been informed of the hazards, as have other employes.

Safeguards

Safeguards, such as efficient general and local exhaust, isolation of the process, protective clothing, personal and plant cleanliness, and periodical and pre-employment in modern plants to assure safe control of the operations medical examinations are measures customarily approved from a health viewpoint. The manufacturers of solvents and solvent equipment customarily provide safety instructions for the use of their products. Those in charge of operations should enforce these recommendations to the letter. Failure to observe instructions, covering both installation and operation of equipment, may result in discomfort and disability for workers, with consequent interruption to production and expense for compensation.

Full instructions for the control of fire hazards are available from the National Fire Protection Association.

Where there is cooperation between management, the medical and safety departments, and workers, serious injuries from the use of solvents seldom occur.

Recent Russian Literature on Natural and Synthetic Rubber—XI

M. Hoseh

QUANTITATIVE Determination of Rubber in the Roots of Rubber-Bearing Plants. N. B. Koyalovich, *Kauchuk i Rezina*, 7, 26-29 (1939). **N-14.**

The successful development of *kok-saghyz* and *tau-saghyz* requires rapid and reliable methods for determining the rubber content in samples. The two existing methods give divergent results. The author proposes a new method of analysis, both rapid and reproducible. He demonstrates the importance of using a representative sample and explains the procedure of securing such sample. A 0.5-gram sample is placed into a test tube, covered with five millileters of a 3% alkali solution and heated on the water bath for one hour. The contents of the test tube are emptied on a glass plate and are triturated until only the rubber threads remain. These threads are carefully washed with water, which action causes them to coalesce into a membrane. This membrane is placed on a watch glass and there covered with two millileters of 1% HCl for 5-10 minutes. Next it is washed again with water, placed into a flat-bottomed test tube, and covered with three millileters of absolute or 96° alcohol. After 30 minutes the membrane is taken out, placed between filter paper, and kept for 30 minutes in a thermostat at 50° C., and finally weighed. Eighty per cent of the membrane is pure rubber; 5% is water soluble substances, and 15% mechanical impurities (insoluble in chloroform).

Rapid Method for Determining Ash in Rubber. M. M. Maĭzenberg and M. S. Averina, *Kauchuk i Rezina*, 7, 30-32 (1939). **SN-40.**

An ash determination by the accepted methods lasts 1.5-2 hours. This greatly inconveniences schedules in plants where ash determinations are run as routine control. Of all the individual operations comprising an ash determination the most time-consuming is the ashing. The authors propose to shorten this operation considerably by carrying out the ashing in a stream of oxygen. Details are given. The proposed method shortens the time required of an ash determination 2-3 times.

Unfounded Use of Zinc Oxide. I. N. Byushev, *Kauchuk i Rezina*, 7, 41-45 (1939). **SN-41.**

The use of ZnO as an activator for organic accelerators in synthetic rubber is a practice carried over from the natural rubber industry. ZnO is usually added to SK in quantities of 5%. There is no reason for this amount other than the accepted practice of the NK industry. The author reviews the literature on this subject and finds neither support nor basis for this practice. Summarizing the work done in the last 6-7 years he finds: (1) The behavior of ZnO as activator for organic accelerators is different in SK than it is in NK. (2) In some recipes ZnO does not act as an activator, e.g., in the case of recipes with carbon black and in the presence of Captax. (3) As to accepted 5%, there is nothing to support it in the case of natural, much less in synthetic rubber. Indeed, evidences exist that this amount of ZnO is unnecessary. (4) Even in recipes where ZnO acts as an activator, this action depends on a multiplicity of factors and at the present this dependency is not yet clear. The author recommends a thorough reexamination of the existing standards of compounding SK in order to work out more rational and better founded recipes.

Retreading Unvulcanized Layers of Rubber Put on Tires. M. G. Esimontovskii, *Kauchuk i Rezina*, 7, 52-54 (1939). **SN-42.**

In the repairing of tires the retreading of layers not yet vulcanized can be done in one of three ways: (1) using metal matrices; (2) using matrices of rubber and rubberized fabric; and (3) cutting the tread mechanically. The last is wholly unsatisfactory primarily because of its detrimental effect on the strength of the tire. The use of metal matrices requires special equipment and is suitable only for larger repair shops. The second method uses matrices made of scrap materials commonly available in small shops. It is easy to make the matrix and quite suitable for shops not equipped with special tools and machines. The author describes in detail the making of the matrix and its use.

Chlorination of Soviet Natural and Synthetic Rubber. F. F. Koshelev, V. N. Provorov, and A. S. Solovieva, *Kauchuk i Rezina*, 8, 21-24 (1939). **SN-43.**

Rubber chloride is widely used, in acid and oxidation resistant enamels, in non-inflammable insulating lacquers, anti-fouling heat insulators, in the film industry, for impregnating waterproof and fireproof fabrics, and in other products. Outside U.S.S.R. rubber chloride is prepared from smoked sheet and from light crepe. In Russia for this purpose is used synthetic rubber and home-grown rubber. The chlorination method differs for various kinds of rubber.

The purpose of this investigation was to find optimum conditions for chlorinating the various kinds of rubber used in U.S.S.R. The authors studied: (1) the most suitable solvent, (2) optimum concentration, (3) chlorine requirements, (4) equipment required, (5) effect of temperature, moisture, and catalysts, (6) removing excess Cl and HCl, (7) best method for washing and neutralizing the end product, (8) drying and grinding the product, and (9) storing of the product. (1) The following solvents were tried: dichloroethane ($C_2H_4Cl_2$), chloroform ($CHCl_3$), carbon tetrachloride (CCl_4), and benzene (C_6H_6). Of these dichloroethane proved the best. (2) For the various kinds of rubber investigated the following concentrations were found to give the best results: *kok-saghyz*, 3%; SK-B (plasticity, 0.50) 3%; rubber from swallow-wort, guayule, and similar tarry rubber, 5%; Sovprene, 3%; divinyl rubber, 7%; gutta percha from *Eucommia* and from spindle tree, 5%. (3) The Cl requirements per kilogram of the various rubbers were: *kok-saghyz*, 3.5 kilograms; swallow-wort, 3 kilograms; guayule, 4.5 kilograms; SK-B, 3.5 kilograms; and Sovprene, 3.5 kilograms. (4) For maximum utilization of the chlorine it was found best to carry out the chlorination in several consecutive reaction vessels. The presence of HCl lowers the Cl absorption by 6-7%. To decide on the best material for building the apparatus, the effect of Pb and Fe on chlorination was studied. The presence of Fe in

the solution lowered the stability of rubber chloride as well as its solubility. Pb did not affect the stability, but lowered the solubility. Neither of these had any effect on the amount of Cl absorbed. (5) Temperature had no marked effect on the reaction. Chlorination can be carried out effectively without externally supplied heat. I, $SbCl_5$, and $AlCl_3$ were tried as catalysts. I increased the stability of rubber chloride, and $SbCl_5$ and $AlCl_3$ raised the absorption of Cl. (6) The best method for removing Cl and HCl from solution at the end of chlorination was found to comprise washing with water, then with a bisulphite, then again with water. This method yields a lighter and more stable product. (7) After the solution is thoroughly washed and neutralized, the rubber chloride is separated either by precipitation with alcohol or by distilling off the solvent. (8) Rubber chloride separated by one of these methods is ground in a ball mill with a 0.5% NH_4OH solution to a fine powder, which is washed in a centrifuge until it is free of chlorides and is neutral. At this stage the product contains 50-60% moisture. It is dried at 55-60° C. to a 10% moisture content. (9) Storage affects rubber chloride very little. It is preferable to store it in a cool place. The chlorine content of the final product is: *kok-saghyz*, up to 55%; Sovprene, up to 59.5%; divinyl rubber, up to 56%; spindle-tree gutta percha, up to 58%. These are the most chlorinated rubbers. Then follow *Eucommia* gutta percha, up to 54.8%; SK, up to 52%; and, finally, the least chlorinated, guayule, 38-48.6% (depending on the variety); swallow-wort rubber, up to 50%; and rubber from sunflower, 42%.

In regard to viscosity these products can be divided into two groups. *Kok-saghyz* and SK chlorination products are more viscous. They are suitable for use as lacquer when dissolved in xylene in concentrations of 15-20%. Chlorination products of swallow-wort rubber, divinyl rubber, and spindle-tree rubber are less viscous, and for effective use their concentration in xylene should be 30-40%. Heating the rubber chlorides for 12 hours at 60-80° C. did not lower their stability. Two stabilizers were tried: urea-diphenylamine and urea-diphenylguanidine. Neither improved the stability. Heating for 12 hours at 60° C. caused no softening. At 80° C. rubber chloride from swallow-wort and from SK began to soften and to bake. The resistance to acid was tried in 5% H_2SO_4, 0.5 and 50% HNO_3, and 0.5 and 20% HCl. The samples were boiled in these acids two hours. The extent of disintegration was judged by loss of weight. Most resistant were chlorinated rubbers from SK-B, *kok-saghyz*, swallow-wort, and guayule. Twenty-two references are given.

A New Method for Evaluating the Gutta Percha Content in *Euonymus Verrucosa Scop.* in the Field. R. F. Kudasheva, *Kauchuk i Rezina*, 8, 25-31 (1939). **N-15.**

The method consists essentially of taking a sample from the root of the plant, making a section from it, staining the section with iodine or bromine solution, and viewing the section under the microscope. Details of procedure are given.

Technology of Extracting Natural Rubber. L. M. Kogan, *Kauchuk i Rezina*, 8, 31-34 (1939). **N-16.**

Kok-saghyz roots contain up to 12% their weight of inulin. The latter can be converted into ethyl alcohol by way of *d*-fructose. The technological processes involved in separating the crude rubber and the inulin from the plant material and then separating the two are discussed.

Obtaining Rubber from the Roots of *Kok-saghyz*. P. K. Bobkov, *Kauchuk i Rezina*, 8, 67-70 (1939). **N-17.**

The most promising rubber-bearing plant in U.S.S.R. is *kok-saghyz*. The composition of the dried roots of one-year-old plants is: rubber hydrocarbon, 7.4%; tar, 2.6%; hydrocarbons, 42%; and other organic and inorganic substances, 48%. The rubber hydrocarbons appear as latex and as coagulated threads. Most of the other hydrocarbons is inulin, which is readily converted to fructose, and the latter can be fermented with yeast to yield alcohol. The other organic and inorganic substances amounting to 48% are not utilized at present and must be disposed of. The following processes are involved in processing the roots: (1) obtaining the latex, (2) separating the hydrocarbons and producing alcohol, (3) preparation for separating the rubber, (4) separating the rubber, and (5) drying it. All these processes are described in detail.

Making Inflated Balls. A. V. Panova, G. I. Dubrova, and A. V. Kazakov, *Kauchuk i Rezina*, 8, 80-84 (1939). **SN-44.**

Rubber balls were produced by joining together four segments. To inflate the ball during vulcanization, a rubber valve is welded into the ball, the ball is filled with $(NH_4)_2CO_3$, and vulcanized. After vulcanization the CO_2 and unreacted $(NH_4)_2CO_3$ must be washed out with warm water, and the ball must be inflated again, this time with air. A method was worked out whereby the ball is inflated with nitrogen. The latter is generated within the sealed ball from NH_4Cl and $NaNO_2$ as result of the reaction $NH_4Cl+NaNO_2 \rightarrow NaCl+2H_2O+N_2$. This reaction proceeds well at the vulcanization temperature 150-155° C. The NaCl and the H_2O are left within; the vulcanized ball does not have to be rinsed inside, and the rubber valve becomes unnecessary. Thus a saving in both time and material is achieved. For a ball having a diameter of six centimeters the internal volume is 90 cubic centimeters. To have a ball of this size normally inflated 0.5-gram of the above ingredients is required. At the vulcanization temperature the pressure within the ball is 10 kilograms per square centimeter; after cooling to normal temperature the pressure remains 0.4-kilogram per square centimeter.

Some Working Peculiarities of Sovprene. A. Blok, *Kauchuk i Rezina*, 8, 87-88 (1939). **S-33.**

Three outstanding peculiarities of Sovprene are: (1) its stability to vulcanization at elevated temperatures without sulphur; (2) its tendency to autopolymerization even at temperatures of 30-40°C.; (3) the absence of attracting forces between Sovprene and SK or NK. The first-mentioned difficulty necessitates a change in the routine of coloring, calendering, and other operations. This creates serious problems, especially in summertime when the cooling water has a temperature of 18-20° C., and the rolls should be kept at 35-40° C. When Sovprene autopolymerizes, it forms mu (μ) and omega (ω) polymers. As synthetic rubber, only the alpha polymers are suitable; the others are a total loss. The mentioned polymers will form even at 30-40°C. Obviously autopolymerization must be either inhibited by chemical means, or special precaution must be taken in storing Sovprene. The lack of adhesion between Sovprene and SK or NK can be overcome by proper compounding both of the Sovprene and the SK or NK. Thus, incorporating reclaim into the Sovprene recipe as well as the SK recipe overcomes this difficulty. The reclaim acts as an intermediate layer.

Soviet Rubber-Bearing Plants at the All-Soviet Agricultural Exhibition. T. V. Florov, *Kauchuk i Rezina*, 9, 5-8 (1939). **N-18.**

(*Continued on page 690*)

Alinement Chart for Fabric Weights, Widths, and Yardages

John G. Harrison, Jr.[1]

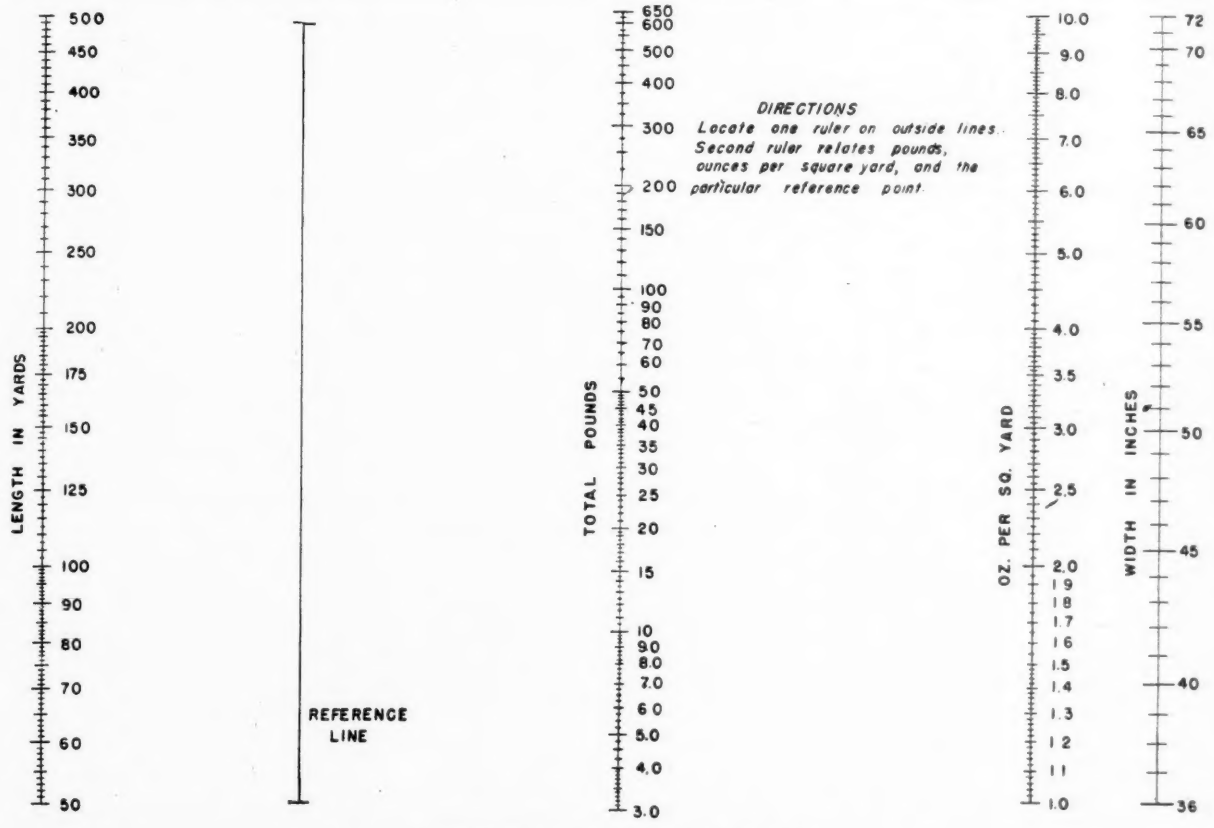
PROCESSORS of fabrics in rubber and similar industries have a calculating problem to relate unit weight to total weight. The variations in yardages and widths of different fabrics require an intermediate calculation for area or require very extensive tables. The nomograph presented furnishes a simple double alinement chart covering the common widths and lengths encountered in most manufacturing operations.

To use the chart, a point on the reference line is obtained by drawing a straight line through the particular length and width being considered. This point represents area, but to avoid confusion the reference line is not calibrated. This point is used to relate total weight to unit weight by a second straight line through the proper points on the three inner lines.

To illustrate the solution of a typical problem: Required to calculate the pounds of coating necessary to apply two ounces per square yard to a roll of fabric 100 yards long and 36 inches wide. The reference point is found by drawing a straight line through the points representing 100 yards on the extreme left-hand line and 36 inches on the extreme right-hand line. This reference point (about one-fourth of the total distance from the bottom of the reference line) can be used to calculate all weights for fabrics of the given dimensions. A second straight line drawn through this reference point and the point representing two ounces per square yard intersects the center line (showing total pounds) at a point giving the answer to the problem of 12.6 pounds. This value is as close to the true value of 12.5 pounds as the average factory scales can be read.

This particular chart has been used with accuracy by operators not capable of making the calculations. It is a convenient time saver, possessing the accuracy required in normal factory operations. The chart has been designed so that unusual widths, greater than two yards or less than one yard, may be calculated as multiples of units shown. Likewise, the decimal choice of unit to ten ounces per square yard and 50 to 500 yards length furnishes flexibility in merely shifting decimal points. In operation a size of 8 inches by 11½ inches has been found accurate without the chart becoming cumbersome.

[1] With Vulcan Proofing Co., Brooklyn, N. Y.



Vulcan Proofing Co. Chart of Weights and Yardages

Progress Report No. 6 of Rubber Director

1. THE supply of synthetic rubbers is ample to provide for any presently foreseen requirement of essential rubber goods, but—

2. There is a serious shortage of the large heavy-duty truck and bus, airplane, and tractor tires. This reflects the shortage of manpower in the rubber goods manufacturing plants. By Presidential Directive, the responsibility for supplying new workers lies with the War Manpower Commission. *Less than 6,000 additional workers*—about half the number to be strong, husky men—stand between the present shortage of tires and an ability to meet all essential requirements.

3. The production goal for passenger tires will be met, if adequate manpower and cotton tire cords are supplied. The goal of *22* million passenger tires is as large as the overall war effort permits—especially in view of the demand for heavy cotton fabrics by the Armed Forces. In contrast with the manufacture of heavy-duty tires, women can be used for the manufacture of passenger tires.

4. The present availability of synthetic rubbers should not lull the public into false security as to the necessity of taking care of its tires. Until more manpower, tire cords, carbon black, etc., are in sight than is now the case, it is but prudent for the owner of every tire to take care of it and worry as to where he will obtain his next tire.

5. The requirements of the Rubber Program for technically and scientifically trained men as well as certain skilled workers must continue to come before all but the most urgent and special manpower demands of the Armed Forces.

6. In short, the problems envisioned by the Baruch Committee when it wrote, "If we fail to secure quickly a large new rubber supply our war effort and our domestic economy both will collapse", have been solved, but the demands of war are such that it may be many months before sufficient manufactured rubber goods, more particularly heavy-duty truck and bus tires, are available to supply the needs of the civilian economy of the United States of America—a country "geared to rubber."

I. Basic Situation

During the second quarter of this year, 209,004 long tons of synthetic rubbers were made. This was at the approximate rate of 836,000 tons per year. 186,035 tons of these were Buna S. During the first half year, a total of 376,087 tons of synthetics were produced, 315,452 tons were consumed, and the inventory of synthetics rose during the first half of 1944 from 43,860 tons to 104,495 tons. This resultant inventory is 33,088 tons higher than was anticipated at the start of the year, and since production for the first half year was within 213 tons of that estimated in Progress Report No. 5,[1] this increase in inventory was entirely due to inability of the rubber goods manufacturing industry to consume as much as had been estimated should be consumed. This was due to a shortage of manpower in the rubber goods manufacturing industry. The shortage of manpower is in part due to abnormally high absenteeism and low productivity of some workers, but in the main it is and has been due to a shortage of an adequate number of workers. By Presidential Directive, the responsibility for supplying new workers lies with the War Manpower Commission.

Despite the ample supply of synthetics, there is still a scarcity of manufactured rubber goods, especially of heavy-duty tires to meet all the stated requirements of the military and essential civilian trucks and buses. Already this shortage is taking off the road trucks and buses that are badly needed for the war effort as well as the daily life of this country. As time goes on these shortages may seriously affect the ability of some industries to satisfy military demands. Pending the time when new workers are found and trained only extraordinary and unusual effort on the part of workers and managements will make it possible to supply the most essential demands.

From the above picture it follows that the solution of the problem lies in obtaining more manpower. Once manpower is provided, production of tires will be limited only by available tire cords and carbon blacks. If these are supplied in accordance with requirements, it will be possible to build enough tires to meet military and essential civilian requirements. Once military requirements decline it will be possible to reestablish our civilian economy and fill our share of what will have to be supplied toward the rehabilitation of foreign countries.

Under the production priority pattern set up by this Office, manufacturers may not build passenger tires at the expense of their ability to build a maximum of heavy-duty military truck and bus, airplane, and tractor tires. However there are many areas where, though it has been impossible to obtain the heavier, stronger men necessary for the building of large tires, it is possible to obtain and train women and lightweight men for the building of passenger tires. Because of this availability of labor for the building of passenger tires, in the face of the shortage of that for heavy tires and because, except for the milling of the rubber compounds, the building of passenger tires uses different facilities, there is no apparent reason why the shortage of large tires should curtail industry's ability to manufacture the passenger tires scheduled for 1944.

At the start of the year it was planned to build 7,000,000 passenger tires during the first half-year—7,686,000 were built. Industry has been authorized to build up to 6,590,000 during the third quarter of this year. It is recognized that the cotton tire cord situation is so tight that any shortage or dislocation of inventory positions might make it difficult to build during the second half-year the 13,590,000 tires called for by the schedule. In some cases the machinery used for the making of the necessary cotton tire cords is identical to that needed for the making of yarns for tent duck. Military demands for tents are now so great that there is little hope of improvement in the tire cord situation and grave danger that any worsening of the manpower situation in the tire cord plants might cut into the production of passenger tires by several million tires. It is expected that the War Manpower Commission will watch the seriousness of this situation.

Progress Report No. 5 published March 17, 1944, stated that a short supply of Buna S had forced us to cut down on the availability of Grade C camelback made with a substantial content of Buna S, and to return to the use of all-reclaim Grade F camelback for the retreading of passenger tires. Since that time it has been possible to make not only Grade C, but also Grade A all-Buna S camelback available for the retreading of any tire. In view of the present availability of Buna S, there is no reason whatsoever to anticipate that this policy will have to be modified. The supply of high-grade camelback is adequate to meet all military and civilian requirements.

Progress Report No. 5, after emphasizing the necessity of caring for present tires and prolonging their life, stated, "In presenting this report it is emphasized that the estimates presented and the adequacy of supply of vital rubber products depend on the following:

"1. Completion on schedule of all construction and expansion programs for synthetic rubbers, allied programs for rayon and cotton tire cords, carbon black, alcohol, etc., as well as those for new rubber industry manufacturing facilities.

"2. Availability of an adequate supply of highly productive labor and well-trained technical staffs—chemists, chemical engineers, physicists, etc.

"3. Freedom from work stoppages and transportation delays at plants making rubber products, synthetic rubbers, rayon and cotton tire cords, carbon blacks, rubber chemicals, alcohol, butylenes, etc.

"4. Maintenance of crude imports at or above projected levels."

It went on to emphasize:

"There are no hedges against failure or delay in the performance of programs for which either we or others are responsible."

Except as altered by the completion of the construction and expansion programs for synthetic rubbers and some of the rubber industry's new manufacturing facilities, these conditions still hold.

Progress Report No. 5 discussed many parts of the Rubber Program in great detail. It is not the intention of this Report to duplicate or deal with those parts which are essentially unchanged or adequately covered in previous reports.

II. Status of Synthetic Rubber and Allied Programs

A. *Construction.* The primary construction of all of the more than 50 plants in the original Rubber Program for the manufacture of butadiene, styrene, Buna S, neoprene, and Butyl has been completed and the plants are operating. A 14,000-ton per year capacity expansion of the neoprene plant at Louisville, Ky., is under way and will be completed late in December. Secondary construction incident to the providing of additional steam, water purification units, by-product recovery systems, etc., are under way at many of the plants, but in most cases the components for them are already on the ground, and they will be completed within the next few months

[1] INDIA RUBBER WORLD, Apr., 1944, pp. 64-68.

DATA FOR EXHIBIT "B"—PROGRESS REPORT NO. 6
Butadiene Production by Sources for United States and Canada by Quarter, 1943 and 1944

(Short Tons)

	From Petroleum				
1943 Actual	Thermal-Cracking	Butane	Butylenes	From Alcohol	Total All Sources
1st Quarter	3,466	.....	1,514	2,112	7,092
2nd Quarter	4,820	.....	4,102	18,215	27,137
3rd Quarter	5,821	481	7,358	37,384	51,044
4th Quarter	7,396	3,449	11,879	71,974	94,698
Total Year	21,503	3,930	24,853	129,685	179,971
1944					
1st Quarter Actual	11,142	5,311	19,975	92,655	129,083
2nd Quarter Actual	13,528	6,534	40,677	98,820	159,559
3rd Quarter Est.	13,100	7,900	32,100	102,000	155,100
4th Quarter Est.	14,100	15,600	75,600	56,700	162,000
Total Year	51,870	35,345	168,352	350,175	605,742

DATA FOR EXHIBIT "C"
Estimated Synthetic Rubber Production* of Buna S, Butyl, Neoprene, and Buna N by Quarters, January, 1943—June, 1945 (In Long Tons)

	1943					1944					1945		
	1st	2nd	3rd	4th	Year Total	1st	2nd	3rd	4th	Year Total	1st	2nd	6 Mo. Total
Buna-S	1,102	18,792	56,741	106,146	184,781	145,641	186,035	185,700	195,000	712,376	195,000	195,000	390,000
Butyl	35	393	364	581	1,373	3,081	3,928	4,560	9,590	21,159	12,430	15,120	27,550
Neoprene	4,372	5,853	10,049	13,329	33,603	13,962	14,991	14,250	14,250	57,453	16,250	17,250	33,500
Buna-N	2,977	3,335	4,063	4,112	14,487	4,399	4,050	6,550	5,050	20,049	4,850	4,850	9,700
Total Synthetic	10,486	28,373	71,217	124,168	234,224	167,083	209,004	211,060	223,890	811,037	228,530	232,220	460,750

* Includes capacities of private plants.

without serious interference with any other important programs.

A privately financed 10,000-ton per year butadiene plant has been approved and is under construction at Bishop, Tex. This plant is being built by the Celanese Corp. of America using the aldol process and will employ petroleum gases as the basic raw material. It is expected that this unit will be in operation by the early part of next year. Pilot plant work indicates that the process will operate satisfactorily and produce butadiene at low cost.

B. *Costs.* A supplementary report to be published in late August will give some of the more pertinent data on the costs of construction and the operating efficiency of the plants. It will also give data as to proven and estimated postwar costs of the resultant products.

C. *Production.* Based on experience gained to date and the present requirements and supply picture, it now appears that the production of butadiene by various processes in 1944 will be as shown in Exhibit B.[2] This chart reflects the effect of a diversion of butylenes to the aviation gasoline program during July and August. This diversion—made possible by the demonstrated over-capacity of the butadiene-from-alcohol plants and the availability of alcohol—was agreed to in order to help fill the emergency requirements of Army and Navy aviation resulting from the flying of more than originally forecasted missions over Europe. During the fourth quarter, it is planned to curtail production of butadiene from alcohol since it is expected that the butylenes will no longer be critically needed by the aviation program, and the manpower situation in the rubber goods manufacturing plants will govern the amount of synthetics that will be needed. Obviously, with the butadiene from alcohol costing about five times as much as that from butylenes, only the great need of aviation gasoline justifies any but a minimum use of butadiene from alcohol.

The actual and estimated production of Buna S, Butyl, neoprene, and Buna N from January, 1943, through June, 1945, is shown in Exhibit C.[2] Exhibit D[2] compares the capacities of various parts of the program as recommended by the Baruch Committee and as now estimated by this Office.

In order to realize these estimates, the irreplaceable technical and operating personnel of the various plants must be kept intact at all times. This need must govern deferment policies.

D. *Allied Programs.* Assurances received from those responsible for supplies of tire cords, carbon black, etc., lead to the conclusion that unless the manpower situation in the rubber goods manufacturing plants improves faster than now seems probable, supplies of these materials, though short, will be adequate for the production programs now contemplated.

[2] Charts are not shown for space considerations, but essential data are provided in tables wherever possible. EDITOR.

DATA FOR EXHIBIT "D"
Rated vs. Anticipated Annual Capacities—Synthetic Rubber Plants—U. S. and Canada
In Long Tons

	Baruch Program	Rated Capacity	Anticipated Capacity	Probable Level of Operation
Butadiene (In short tons × 1.23 equal long tons Buna S)	978,000	850,000	1,100,000	780,000
Styrene (In short tons × 4.0 equal long tons Buna S)	875,000	812,000	1,200,000	780,000
Buna S	875,000	735,000	1,000,000	780,000
Neoprene	69,000	63,000	.....	70,000
Buna N	.....	30,000	.....	19,000*
Butyl	139,000	75,000	.....	75,000

* Limited by acrylonitrile availability.

III. Adequacy of Tire Production Plans Versus Requirements

To the extent that tire facilities can be interchanged, the following production priority pattern has been set up by this Office to govern the production of tires by each company until the full requirements in each group and sub-group have been satisfied in the order listed. For example, no facilities—equipment, materials, and labor—can be used to produce Group 2-f tires until full capacity of the facilities have been utilized to make the requirements of Group 2-e tires.

Production Priority Pattern (as listed in Rubber Order R-1)

1. Airplane tires and tubes:
   a. Large-size tires, built on truck equipment.
   b. Small-size tires, hand built or built on industrial pneumatic equipment.
   c. Other small-size tires, built on passenger equipment.
   d. Tubes.
2. Truck and bus tires and tubes:
   a. Combat tires.
   b. Extra large-size tires, 16.00 and larger cross-section.
   c. Large-size tires, 9.00 through 14.00 cross-section.
   d. Medium-size tires (dual bead), all 10-ply up to and including 8.25 cross-section.
   e. Small-size tires (single bead), 8-ply and under, and 9.00 x 16, 8-ply.
   f. Tires with 15-inch and 16-inch rim diameters, up to and including 7.50 cross-section (4-, 6-, and 8-ply only).
   g. Solid tires.
   h. Tubes.
3. Tractor-implement tires and tubes:
   a. Large-size tires, over 7.50 cross-section.
   b. Front and small-size tires, up to and including 7.50 cross-section.
   c. Tubes.
4. Industrial tires and tubes:
   a. Bogie rollers.
   b. Pressed-on solids.
   c. Cured-on solids.
   d. Pneumatic tires.
   e. Tubes.
5. Camelback and repair materials:
   a. Truck type and heavy duty.
   b. Passenger type.
6. Passenger and motorcycle tires and tubes:
   a. Tires.
   b. Tubes.
7. Bicycle tires and tubes:
   a. Tires.
   b. Tubes.

The following tabulation shows:

1. The estimated requirements of all claimants.
2. The estimated capacity of the industry—assuming full use of all facilities.
3. The actual output for the first two quarters of 1944 and estimates for the next four quarters based upon labor conditions and manpower shortages now experienced by the individual companies in the Industry.

The use of facilities for building large-size airplane and combat-runflat tires competes directly with those for Group 2-c heavy-duty truck and bus tires. There-

GROUP 2. TRUCK AND BUS TIRES
[Thousands of units]

Calendar Quarter	Total Estimated Requirements	Capacity Based on Full Use of All Facilities	Actual and Estimated Productions on Basis of Present Conditions
1944:			
First quarter	4,589	3,800	3,598*
Second quarter	5,253	4,227	3,620*
Third quarter	4,711	4,636	3,750
Fourth quarter	4,786	4,816	4,000
Year 1944	19,339	17,479	14,968
1945:			
First quarter†	5,241	5,176	4,250
Second quarter†	5,482	5,395	4,350

* Actual production.
† Includes high-flotation program.

fore the requirements for Group 2-c tires cannot be met until the available facilities have been fully manned and used for the manufacture of tires in the higher groups. However, with the exception of Group 2-c the most essential requirements are being met, even under existing labor conditions. The table below sets forth the position of tires in this group.

GROUP 2-c. TRUCK AND BUS TIRES (9.00 THROUGH 14.00 ONLY)
[Thousands of units]

Calendar Quarter	Total Estimated Requirements	Capacity Based on Full Use of All Facilities	Actual and Estimated Productions on Basis of Present Conditions
1944:			
First quarter	788	586	576*
Second quarter	1,095	688	608*
Third quarter	1,000	876	663
Fourth quarter	1,000	995	750
Year 1944	3,883	3,145	2,597
1945:			
First quarter†	1,050	1,030	900
Second quarter†	1,100	1,097	950

* Actual production.
† Includes high-flotation program.

Inasmuch as there is a sufficient supply of materials to fill the requirements, *it is obvious from the above that the production of needed heavy-duty truck and bus tires is dependent upon manpower to man the facilities already provided and building.*

The above tables reflect a newly programmed expansion of facilities initiated to meet new Army needs of so-called special purpose high-flotation truck and bus tires. In connection with the shortages shown in these tables, it is perhaps worthy of comment that enough tires are being made to meet the stated replacement requirements for both military and civilian use, but not enough to meet the stated replacement requirements together with those of the integrated vehicle program. The extent to which it may be advisable to defer original equipment programs to release tires for civilian replacement is being studied by the War Production Board.

The procedure necessary to distribute the output of all tire factories is based upon claimant agency allocations and directions to the industry to produce and ship in accordance with distribution patterns established by agreement with the various claimants.

Aside from the above demands for tires, the overall supply and requirements picture for synthetic rubbers is shown in the table below and in Exhibits E[3] and F.[2]

The following tabulation shows in long tons the actual use of crude and synthetic rubbers during 1943 and through first half of 1944, estimates of consumption in the second half of 1944 and first half of 1945 based upon the foregoing situations and present production plans. Whereas in Exhibit E the rubbers shown as exported were those exported before fabrication, in this table the figures for exports also include the rubber contents of exported fabricated rubber goods and the figures for other consumptions are correspondingly adjusted.

DATA FOR EXHIBIT "F"
Supply of Rubber *vs.* Requirements—United States and Canada by Quarters*—1943-1945
In Thousand Long Tons

	1943				1944				1945		Totals		
											Year 1943	Year 1944	6 Mos. 1945
Synthetics	8	19	56	112	147	168	190	211	222	222	195	716	444
Crude	103	100	82	62	50	42	42	33	31	30	347	167	61
Req'ts Total	111	119	138	174	197	210	232	244	253	252	542	883	505
Synthetics	10	29	71	124	167	209	211	224	229	232	234	811	461
Crude	20	14	9	13	19	29	35	35	31	32	56	118	63
Supply Total	30	43	80	137	186	238	246	259	260	264	290	929	524
Synthetics	7	17	32	44	64	105	126	139	146	156	...	...	...
Crude	355	269	196	147	116	103	96	98	98	100	...	...	...
Stocks Total	362	286	228	191	180	208	222	237	244	256	...	...	...

* All data as of end of quarters.

IV. Conversion to Synthetic Rubber Program

The conversion program can only be considered finished when the minimum requirements of crude rubber are no greater than the income of this commodity. Large sizes of truck and bus tires and military tires including aircraft are consuming at present more than 60% of the crude rubber that is being used. The projected conversion schedule calls for continued reduction of crude rubber in these sizes. However, even in the ultimate program a large percentage of use of crude rubber will still be in these tires.

Tires and tubes required by the Ordnance Department are 82% converted to synthetic. The conversions that are planned for the next few months will bring this to 85%. It is the consensus of opinion of those responsible that 86% conversion to synthetic will be the optimum that can be accomplished. The actual monthly consumption of crude rubber for Ordnance items is estimated at 3,230 tons per month during the third quarter, and 2,438 tons for the fourth quarter. The only Ordnance products other than tires that require large quantities of crude rubber are tracks and bogies for tanks. These had been converted mostly to synthetic, but experience in combat resulted in changes of vehicle design which has necessitated a temporary return to the use of crude rubber.

Satisfactory progress has been made during recent months on aircraft items including tires and tubes. The program which is outlined for the next three months will bring the entire aircraft program close to the ultimate goal.

Military and essential civilian tires and tubes, tracks, and bogies for tanks and fuel cells for aircraft consume approximately 85% of the crude rubber that is being used. Military items such as special types of wire and cable, hose, medical and drug sundries and proofed fabrics for specialized uses require most of the additional crude rubber that is being allocated. There are a few items where no synthetics now available have been found adequate, but in most instances a conversion program is under way.

The consumption of crude rubber during the first half of 1944 was well within the estimates of our conversion program. The conversion schedule which is projected for the last six months of 1944 can be accomplished without seriously affecting production or performance of products. Assuming that there is no failure to carry out the conversion program that has been projected, and that this country receives the quantities of crude rubber that have been promised, this nation will be able to live within its income during 1945. However, despite the above it must be realized

[3] Data from Exhibit "E" are not shown since the accompanying table gives all essential data on rubber.

ACTUAL AND ESTIMATED CONSUMPTION OF CRUDE AND SYNTHETIC RUBBERS

	1943					1944					1945		
	First Quarter (Actual)	Second Quarter (Actual)	Third Quarter (Actual)	Fourth Quarter (Actual)	Total (Actual)	First Quarter (Actual)	Second Quarter (Actual)*	Third Quarter (Estimated)	Fourth Quarter (Estimated)	Total (Estimated)	First Quarter (Estimated)	Second Quarter (Estimated)	Total ½ Year (Estimated)
Military	66,000	66,100	68,300	71,000	271,400	78,000	74,000	84,000	89,000	325,000	93,000	93,000	186,000
Truck and buses	17,100	19,800	23,500	29,200	89,600	36,000	43,000	46,000	48,000	173,000	46,000	46,000	92,000
Passenger size tires	1,000	4,300	13,200	28,700	47,200	23,000	27,000	41,000	43,000	134,000	47,000	46,000	93,000
Other indirect military and civilian	6,600	7,600	8,900	9,400	32,500	16,000	15,000	16,000	18,000	65,000	20,000	20,000	40,000
Total United States	90,700	97,800	113,900	138,300	440,700	153,000	159,000	187,000	198,000	697,000	206,000	205,000	41,000
Exports	11,400	13,000	16,100	30,100	70,600	35,000	42,000	35,000	35,000	147,000	36,000	36,000	72,000
Canada	9,300	8,300	7,500	5,200	30,300	9,000	9,000	10,000	11,000	39,000	11,000	11,000	22,000
Grand total	111,400	119,100	137,500	173,600	541,600	197,000	210,000	232,000	244,000	883,000	253,000	252,000	505,000

* Includes preliminary data for June.

that to a limited extent in some products we are sacrificing quality and quantity in order to conserve crude rubber. The availability of a greater amount of crude rubber would, therefore, at this time enable us to turn out greater quantities of rubber products with existing equipment and manpower.

V. Scrap and Reclaim Rubber

The following table shows the tonnage of scrap rubber originally collected, its cost, amount received for it, and the probable loss incident to the whole transaction after sale or disposal of the miscellaneous scrap remaining in the storage yards on December 31, 1944.

PROJECTED SCRAP RUBBER BALANCE SHEET AS OF DECEMBER 31, 1944

	Short Tons Collected	Cost of Scrap	Tons Sold*	Amount Received
Tires and tire parts	873,728	$28,271,937	873,728	$17,449,410
Tubes	31,965	1,040,229	31,965	6,346,877
Miscellaneous	242,405	7,838,868	71,834	2,200,000
Total	1,148,098	37,151,034	977,527	25,996,287
Cost of handling, storing, and selling				$14,797,892
Total cost				51,948,926
Net loss				25,952,639
Balance miscellaneous scrap (tons)				170,571

* Includes estimates sales for balance of 1944.

The miscellaneous scrap on December 31, 1944, may be considered as of little or no value. To liquidate this scrap and close the storage yards at or prior to June 30, 1945, may cost approximately $2,000,000, giving a total government scrap rubber net loss of about $28,000,000.

The value of this scrap during the critical years just past was immeasurable. It permitted the manufacture of the reclaimed rubber which saved the day while the synthetic plants were building and which continues to play a vital role.

In addition to the residue of scrap tires now on hand, the wearing out of tires now on cars will bring to the scrap market some additional thousands of tons of scrap. However, from now on most scrap tires will have been retreaded with synthetics, and the reclaiming industry will be faced with new problems incident to the reclaiming of synthetic rubber scrap. Some in the reclaiming industry have made great progress in the development of methods for doing this. They have not as yet developed entirely satisfactory methods for reclaiming mixtures of synthetic rubber and crude rubber, such as are found in the truck and bus tires now being made as well as in crude rubber passenger tires which have been retreaded with synthetics. Inasmuch as the future of these companies is so dependent upon the solution of this problem, we can safely rely upon them to do the necessary work to perfect their processes.

VI. Manpower

Progress Report No. 5 stated, "Manpower continues to be a serious problem throughout the industry and the achievement of maximum production of rubber products is being impeded by manpower shortages in certain critical labor areas." This is doubly true today. *Manpower is the unsolved problem.* The present production of finished rubber goods is and will be controlled by available manpower and the productivity of labor now on the job.

Recognizing the seriousness of this situation, the War Department has arranged for the return from the Army of certain heavy-duty tire makers over 30 years of age still in this country. The Inter-Agency Committee on Occupational Deferments has recognized the needs of the rubber industry. The industry has moved a considerable amount of production out of critical labor areas into other less critical areas. The Army has cooperated with drives to help reduce absenteeism, and leaders of management and labor are working toward the greater efficiency and productivity which only their efforts can realize.

VII. Driving Speed

Despite all of the warnings issued in previous Progress Reports, in various press releases, and in radio programs, there has been an unfortunate tendency for the public to feel that the availability of synthetic rubber permits relaxation of the speed limit. The American Automobile Association commented upon this in a recent report, and several states have recently removed the wartime speed limit. With the manpower and tire cord situations as critical as they are, this relaxation of the speed limit may be costly.

VIII. Rationing

In any consideration of rationing, everyone is, of course, interested in: "How long before tires will be available for passenger cars?" The synthetic rubber is now available, but shortages of manpower and cotton tire cord will set the limits of production. The extent to which these may supply the demand sufficiently to permit of further relaxation of rationing restrictions is highly debatable. Some feel that as long as gasoline is rationed as at present, the demand for new tires will decline so that rationing can be relaxed. Others feel that the tires now on the road are rapidly wearing out and that even with 22 million passenger tires built this year, the needs of the public will be greater next year than this year. The extent to which the speed is held down and tires are given utmost care by the public will help determine the date that rationing can be further relaxed.

Several changes have been made in the Tire Rationing Regulation of the Office of Price Administration since the last Progress Report. The purpose of the changes has been to assure the proper distribution of available supplies of tires and to remove restrictions wherever possible.

The more important changes have been:

1. *Simplification of inventory reporting by tire dealers.* Though all tire dealers are required to maintain inventory records of tires, only certain dealers are required to report such inventories to OPA. By selecting certain dealers to report inventories, adequate control and information is secured and the large majority of dealers are relieved from the necessity of reporting.

2. *The restriction limiting dealer inventories was removed.* The original purpose of this restriction was to distribute slow-moving stocks. The purpose was accomplished, and the restriction was removed.

3. *So called factory-second passenger tires classed as Grade III.* The slow movement of factory seconds and the scarcity of used and recapped Grade III passenger tires warranted the reclassification of factory seconds from Grade I to Grade III. They are now available to persons ineligible for new passenger tires.

4. *Elimination of periodic inspection of passenger tires.* After a year and a half, the primary objectives of the regulation have been accomplished. The elimination of the regulation will materially ease the burden on the motorist. Inspection and proof of need, however, are still required in order to secure a replacement tire.

5. *Broadening eligibility for passenger tires.* Passenger vehicles for which valid supplemental gas rations (generally "B" and "C") have been issued were made eligible for new passenger tires (Grade I). Passenger vehicles for which "A" gas rations only have been issued were made eligible for Grade III tires—used, recapped, and factory-second passenger tires.

6. *Transfer of new passenger tires by manufacturers without certificate.* In order to facilitate the immediate distribution of new passenger tires by manufacturers to dealers, manufacturers were permitted for a limited time to transfer new passenger tires to dealers without certificate. Inventory control was maintained through notification to OPA of each transfer.

7. *Invalidation of certificates; nontransferability of replenishment portions of certificates.* Replenishment portions of tire certificates dated prior to April 1, 1944, were made invalid after July 15, 1944, unless they were in the possession of the manufacturer on July 15. Transfer of replenishment portions of tire certificates was prohibited. This provision gave a needed flexibility in the distribution system to adjust inventories. The need of inventory adjustment largely disappeared with increased production.

8. *Inner tubes were removed from rationing restrictions.* The inventory and production of all inner tubes showed a supply adequate to meet anticipated demand. This position warranted the removal of rationing restrictions from the sale of inner tubes. It will also aid in the conservation of tires, since a good tube properly inflated prolongs the life of a tire.

IX. Research and Development

The Akron pilot and evaluation laboratories owned by Rubber Reserve Co. are now being operated by the University of Akron, and six pilot laboratories are being built at various copolymer plants. As time goes on, it becomes more and more evident that the most important goal of the research efforts must be so to modify Buna S or develop a new polymer that (1) it will evolve less heat, (2) it will not lose so much of its strength at elevated temperatures, and (3) when compounded for maximum strength, it will have such resiliency that it will permit making tires that not only will heat no more than the old crude rubber tires, but will give the vehicle all of the "soft ride" sought for in the prewar tire. Four avenues of attack have shown some promise; two considerable promise. Some test tires have been run. Other tires will be made and run in the coming months. This research work should be carried out with all possible vigor, irrespective of any guesses as to when the war may end. Synthetics will be needed after the war. A large part of the synthetic rubber industry must and will live.

X. Crude Rubber

Exhibit F[2] shows the long tons of crude rubber (dry basis) received in this country through July 1, 1944, together with estimated arrivals for the second half of this year.

Responsibility for the activities of Rubber Development Corp. was given to the Office of Economic Warfare, predecessor of the Foreign Economic Administration, by Presidential Directive July 15, 1943. Production from South America has been disappointing; today it appears to this Office the prospects for 1945 are little or no brighter. As noted at the end of the section on conversions, the need of crude is so great that it is hoped no pains will be spared to obtain all possible. The Foreign Economic Administration has recently advised this office of the termination of their project in Haiti for the development of *Cryptostegia*.

On March 19, 1943, this Office advised the Secretary of Agriculture that it did not feel that the need of guayule, which requires from 2½ to four years before it may be harvested commercially, was sufficiently pressing to warrant the use of irrigated, highly productive lands. As a result, expansion was suspended.

Funds for the cultivation, processing, and research of guayule shrub are made available annually by the Congress. Present appropriations do not provide for further planting. The maximum amount of shrub which may be processed by renovating the existing mill at Salinas, Calif., and building an additional processing mill at Bakersfield, Calif., will be harvested and processed between now and the end of the fiscal year, June, 1945. The Department of Agriculture estimates that approximately 600 long tons of guayule will be produced by then. Plans have been prepared whereby approximately 26,000 long tons of guayule rubber may be processed from existing acreage. Whether or not this total amount will ever be produced is dependent upon future appropriations by the Congress.

Until imports of crude are sufficient to supply all needs for crude rubber, it is inconceivable that any available source be destroyed and for this reason, this Office has, therefore, recommended holding the present plantings until at least June 30, 1945.

XI. Pricing of Synthetics and Crude

This office is on record that the complications incident to a two-price system for synthetics under present regulations should be replaced by a single-price system at the earliest possible moment and that this single-price system should reflect insofar as possible the probable future costs of the various synthetics. No one type of synthetic or crude rubber should be subsidized at the expense of the others.

XII. Rubber Order R-1

The regulations which govern the use of crude rubber and various synthetics are covered by Rubber Order R-1. This is drawn in such a way as to minimize unnecessary restrictions upon industry and yet, by grouping products according to careful weighing of conditions and essentiality of products, make it possible through the issuance of further amendments to remove restrictions as rapidly as new conditions permit, as well as to tighten them in the event of unexpected emergencies. If it were not for the present manpower situation, it would be possible to remove practically all of the restrictions which now exist, except as they are necessary to protect against the use of crude rubber for any non-essential items or for any use which can be adequately filled by synthetics.

XIII. Interchange of Information with the U. S. S. R.

For the past year and a half there have been many negotiations looking toward a more complete interchange of information with the Union of Soviet Socialist Republics on the manufacture and use of synthetic rubbers. They have received a general insight into our synthetic rubber industry and have made contracts for technical and engineering plants for the manufacture of synthetic alcohol from petroleum and the manufacture of neoprene, which does not keep well enough in unvulcanized form to warrant shipping from here. We, in turn, have received some information as to the basic nature of the processes used by the Russians.

Negotiations incident to a possible two-way interchange of more complete information, under conditions which recognize that there is no longer the same need of this information as existed a year and a half ago, have been proceeding slowly.

XIV. Organization of the Office of Rubber Director

From the start, the Office of Rubber Director has been staffed with men of proven capacity to discharge the type of responsibility given them. Every effort has been made to operate as a business institution with a minimum of personnel and without unnecessary red tape or duplication of effort. As a result of these policies, it was possible during the fiscal year ended June 30, 1943, to turn back to the Treasury a very substantial percentage of the budget set aside for the payment of salaries and in the next fiscal year to turn back 35% of the budget voted by the Congress. The budget on which the Office is now operated for the current fiscal year is only $646,000, as compared with an annual rate of $2,240,000 during the fiscal year ended June 30, 1943.

At the peak of its activities the Office employed 505 people, of which some were part-time consultants. Throughout the last 12 months this total was steadily reduced. There are now less than 250 on the payroll.

Within the organization there has been a full delegation of specified responsibilities to Assistant Directors in charge of (1) Operations, (2) Research and Development, (3) Conversions from Crude Rubber to Synthetics, and (4) Plant Construction. It is to the personnel of the Office and their loyalty to the purposes of carrying out the recommendations of the Baruch Report that any success of this Office must be attributed.

BRADLEY DEWEY,
Rubber Director

July 25, 1944.

WPB Requests Greater Use of MPC Carbon Black

In a memorandum to the rubber industry dated August 3, Thomas J. Starkie, chief of the Pigment and Color Section, Chemicals Bureau, WPB, requested the cooperation of the industry in replacing EPC with MPC carbon black wherever possible until the production of the lower-yield EPC black could be increased sufficiently to take care of the demand. Data on contemplated production of both channel and furnace carbon blacks for 1945 is revealed in this memorandum, which is given herewith.

WAR PRODUCTION BOARD
WASHINGTON, D. C.
August 3, 1944

TO: Members of the Rubber Industry
FROM: Thomas J. Starkie
Chief, Pigment and Color Section

You have recently reviewed your August allocation for both Channel and Furnace Carbon Black, and we regret that it was necessary for us, in many cases, to deny or cut your request for Channel Carbon Black.

This situation should clarify itself by the end of this year—each month will bring in additional new production of both Channel and Furnace Carbon Blacks. However, there is enough Carbon Black now being produced and in stock to fully meet the 1944 requirements.

We have increased the production of all grades of Furnace Carbon Black since January 1, 1942—from a production of less than 100,000,000 pounds per year to a present production of over 430,000,000 pounds per year, and when the program is completed the early part of 1945, the annual production of Furnace Carbon Black will be over 625,000,000.

The demand for Channel Carbon Black started in the latter part of 1943. Unfortunately, the increased demand for Easy Processing Channel Carbon Black has cost the Channel Black Industry at least 15% less production. Therefore, it is necessary that we ask your cooperation in replacing a part of your EPC requirements with Medium Processing Channel Black. We have received excellent reports from the rubber industry on the blends of Medium Processing Channel Black with semi-reenforcing Furnace Blacks.

The Carbon Black manufacturers are, and have been, increasing their production of EPC Black and under the most difficult conditions—short supply of natural gas available for the manufacture of Channel Carbon Black because of state restrictions has been a problem, and it was necessary for the Rubber Director's office to decrease the over-all 1945 requirements by 50,000,000 pounds, and increase the Medium Loading Reenforcing Modulus Black, 50,000,000—this has been done.

Channel Black production is being increased monthly, and not later than March 1, 1945, the total production will be over 600,000,000 pounds per year, giving us a grand total of over 1,200,000,000 pounds per year of all Black for your industry that never in history consumed 500,000,000 pounds, in any one year.

It is, therefore, imperative that you continue to cooperate with us as you have in the past, and we request that you contribute, wherever possible, by substituting Medium Processing Channel Carbon Black, for EPC, either alone or blending with semi-reenforcing Furnace or High Modulus Furnace, or High Modulus alone. We believe that this can be done without any loss to the quality of your finished products, and in many cases, we believe it will show improvement.

You may rest assured that your increased demands for Carbon Black will be met—and on time—as they have in the past two years.

Thanking you again for your cooperation, we are,

Very truly yours,
THOMAS J. STARKIE, Chief
Pigment and Color Section
WPB—Dept. 7610

Special Report of the Rubber Director

Recommending Termination of Special Powers

IT IS now almost two years since the Rubber Survey Committee, composed of Mr. Bernard Baruch, Dr. Karl Compton, and Dr. James Conant, stated:

"Of all critical and strategic materials, rubber is the one which presents the greatest threat to the safety of our Nation and the success of the Allied cause. Production of steel, copper, aluminum, alloys, or aviation gasoline may be inadequate to prosecute the war as rapidly and effectively as we could wish, but at the worst we still are assured of sufficient supplies of these items to operate our armed forces on a very powerful scale. But if we fail to secure quickly a large new rubber supply our war effort and our domestic economy both will collapse. Thus the rubber situation gives rise to our most critical problem."

Today, as is shown in Progress Report No. 6 of the Office of Rubber Director, this most critical problem has been solved.

In its report the Baruch Committee emphasized the need for new steps to ration and conserve rubber, recommended the release of more rubber to maintain necessary civilian driving, emphasized the necessity of highest priorities for the materials needed to build the plants for the processes then approved, and recommended the appointment of a Rubber Director with broad powers which cut across the organizational responsibilities and authorities of many established agencies. Emphasizing the necessity of keeping our Armed Forces fighting and our essential civilian wheels turning, it stated:

"This can best be done by 'bulling through' the present gigantic rubber program and by safeguarding zealously every ounce of rubber in the country."

As recorded in the six progress reports of the Office of Rubber Director, these recommendations have served as a guide to its work. Subject only to very minor departures, they have been carried out.

Today, the plants of the synthetic rubber program are built and operating. Products which formerly required 80% of the crude rubber consumed are now being made with synthetics, and further conversions, which are already planned and which will go into effect within the next few months, will further cut down the consumption of crude so that the country will be in a position to live within its income of new crude rubber. A stockpile of over 100,000 tons of crude rubber is still on hand, and a stockpile of 104,000 tons of synthetics has been built up. Recapping and the necessity of conserving rubber have been accepted by the public.

The Rubber Reserve Co. comprises a well-staffed organization. Until such time as ways are found for the plants to go into private hands, it is fully qualified to oversee and coordinate the efforts of the many outstanding companies selected by them to operate the synthetic rubber plants and to oversee the transportation and storage of the resultant synthetics as well as the crude rubber stockpile.

Six pilot plants are being built to pilot improvements in the processes for making GR-S, commonly known as Buna S synthetic rubber. Laboratories in Akron owned by Rubber Reserve Co. are being operated by the University of Akron to manufacture on a small scale and evaluate new types of synthetic rubbers including those presented by companies not possessing adequate piloting facilities. A test fleet is being operated in Texas for the Government by a group of the smaller tire manufacturing companies. The research facilities and test fleet give all manufacturing companies, large and small, equal opportunity. They should be continued under suitable direction as a safeguard for the future until such time as a mechanism can be devised to place the new synthetic rubber industry in the hands of private enterprise.

The rubber goods manufacturing industries have been expanded so that their facilities will soon be adequate to permit manufacturing all of the rubber goods now essential to the prosecution of the war and the maintenance of essential civilian activities. The requirements of the rubber goods manufacturing industry for rayon and cotton tire cords, various types of carbon blacks and special chemicals have been determined by the Office of Rubber Director and presented to those divisions of the War Production Board which are responsible for seeing that the demands are met.

The requirements for manpower have been presented repeatedly to the War Manpower Commission which is responsible for seeing that adequate manpower is available to the rubber goods manufacturing plants as well as the synthetic rubber plants.

In short, the program has been carried to a point where with reasonable manufacturing efficiency, only the failure of those responsible to supply adequate manpower, or essential components other than rubber, can result in a shortage of essential rubber goods of high quality.

Given adequate supplies of men and components, a very small, ably staffed and well-directed group should be able, with the cooperation of the rubber goods manufacturing industry, to watch over changing conditions so that essential demands are met and the industry properly guided through the reconversion period. When crude rubber is again available, it will be necessary to see that small companies are equitably treated until it is freely available to all.

In view of the above, I feel that there is no reason to maintain further the broad powers that were given to the Rubber Director only because they were essential to the meeting of an emergency which now no longer exists. Consequently, I am recommending that the Office of Rubber Director be abolished and that priority powers incident to the allocation of rubber goods and such regulation as the rubber goods manufacturing industry may need, as well as the determination of the industry's needs for products which are in short supply, be given to a Rubber Division within the War Production Board. This Rubber Division might well report to the Chairman or the Executive Vice Chairman and be organized similarly to and operated in the same general way as the Steel and Aluminum Divisions of the War Production Board. Once the War Production Board has determined the essentiality of a program, its Production Executive Committee, which includes representatives of the Armed Forces, is the ideal body to insist that adequate manpower be provided.

Such a Division could cause Rubber Reserve Co. to supply the requirements of synthetics, and Rubber Reserve Co. could negotiate where necessary with the Petroleum Administration for War or its requirements of raw materials from petroleum. Debatable points could be appealed to the Director of War Mobilization.

Research incident to the improvement of present processes for the manufacture of synthetics should be carried forward under the direction of Rubber Reserve Co. in accordance with already determined and approved policies. Research pertaining to the piloting and evaluation of new synthetics should be overseen, with the aid of a consulting board, either by the Rubber Division of the War Production Board or the Rubber Reserve Co. The objects of such research have been clearly defined and the organizations and policies therefor well set and functioning. Under such a set-up new provisions governing conversions from the use of crude to synthetics and *vice versa* during the first months after more crude rubber is available would be governed by this Rubber Division of the War Production Board which would presumably (1) utilize the services of men who know the problems and (2) continue to operate with the help and advice of rubber industry technical committees.

The new Rubber Division of the War Production Board should have the close cooperation of the Office of Defense Transportation and the Office of Price Administration.

The proposed new set-up provides for the handling of present and future day-to-day problems incident to rubber in the same way that these problems are handled for other products within the War Production Board. It would do away with certain overlapping and duplicating of functions inevitable to the continuance of the present set-up.

The above recommendations are influenced by the recommendation in the report of Bernard M. Baruch and John M. Hancock of February 19, 1944, entitled "Report of War and Postwar Adjustment Policies" in which they stated that "All controls and the war agencies administering these controls should be liquidated when no longer necessary." The controls exercised by the Rubber Director over outside agencies are no longer necessary.

I recommend that the above changes be made effective September 1 of this year or at such earlier time as may be conveniently arranged.

BRADLEY DEWEY
Rubber Director

July 25, 1944.

WAR PRODUCTION BOARD
WASHINGTON 25, D. C.

July 25, 1944

Office of RUBBER DIRECTOR
Tel. REpublic 7500

IN REPLY REFER TO
5001 Municipal Center Bldg.

Hon. James F. Byrnes, Director,
Office of War Mobilization,
White House,
Washington, D. C.

Dear Justice Byrnes:

Transmitted herewith is a Special Report

(*Continued on page 662*)

EDITORIALS

Tire Crisis Offers Opportunity for Improved Labor Relations

THE recently developed unanticipated, and as yet unsatisfied demand for greater heavy-duty tire production, which has brought out into the open some of the problems plaguing both management and labor during this wartime production period, may offer a good opportunity for making new progress in the improvement of management-labor relations. Without attempting to cite cases it is generally admitted that neither labor nor management can be considered as being entirely without guile in their dealings with each other in the past on questions of wages and hours, working conditions, and the numerous other items involved in the day-to-day relations between employer and employe.

There is no reason for not viewing management-labor relations realistically at all times. An employer aims to obtain labor in any industry at as low a cost and with as few commitments on a long-term basis as possible; while the employe endeavors to obtain as great a return for as long a time as possible for his efforts. In the inevitable bargaining that follows, sometimes one side and sometimes the other gains a temporary advantage, depending on economic conditions, labor supply and demand, and the amount of organized bargaining power possessed by each party.

In these days of legalized and government supported "collective bargaining" and strongly organized labor groups, the balance of power has swung toward the labor side, but the time-worn phrase that "new power brings new responsibility" is definitely applicable in the current situation and to a much greater extent than under ordinary peacetime conditions. Rubber industry tire workers cannot avoid the realization that they may have in their hands the responsibility for enabling us to gain or lose an early victory in the European conflict. The URWA president has been on the battlefields of France with other union leaders getting first-hand information on the necessity of maximum war production, and the executives of leading rubber companies have recently returned from London greatly impressed with the urgent need of an immediate increase in the production of heavy-duty tires.

A statement in the WMC labor-utilization report adds further support to the conviction that the rate of production of heavy-duty tires has a direct effect on the progress of the present Battle of France when it says: "—stockpiles no longer exist and movement of army equipment is dependent directly on tire production."

This new responsibility of the tire workers is shared by rubber industry management, however, since if the government and top union officials are successful in convincing the tire workers to abandon, temporarily at least, "self-imposed" limitations of production, and if other rubber workers accept transfers to more difficult heavy-duty tire jobs, then management must agree not to take advantage of new production records established under unusual wartime conditions in future efforts directed to the reduction of labor costs.

It seems very probable that production rates for any and all jobs in the rubber industry will have to have many new standards as time goes on and the postwar balance between the use of natural and synthetic rubbers is arrived at for the many different rubber products. During the present emergency and in all future management-labor bargaining a rather old, but fundamental truth, if used, might be a real cornerstone upon which to build anew a better management-labor relation, i.e., "an honest day's work for an honest day's pay."

War Agency Machine Needs Tightening Up

THE recent explosion in the War Production Board involving the resignation of Executive Vice Chairman C. E. Wilson and the departure of Chairman Donald Nelson on a White House mission to China has been indicated in some quarters as the type of situation that will require the good services of the country's No. 1 trouble-shooter, Bernard M. Baruch, to make again the necessary recommendations to reorganize our war agency machine. Actually this should not be necessary; the main requirement is to accept and act on more of the recommendations already made by Baruch and Hancock in their "Report on War and Postwar Adjustment Policies" on February 15, 1944.

In the above-mentioned report Baruch and Hancock stated that there already was too much overlapping government machinery for the most efficient functioning of government. Economies can be effected and manpower released, they further stated.

"The existing agencies have the basic organizations, the experience and know-how, the feel and touch with these problems. What is needed is not the loosening up that would be the inevitable result of a new super-agency cutting across every other agency, but *a general tightening up* of the entire government machine—both for mobilization and demobilization. The two go hand in hand."

The resignation of Rubber Director Bradley Dewey and his recommendation that the Office of the Rubber Director be abolished and its duties carried out by a Rubber Goods Bureau in the WPB was the first effort "—eliminating overlappings, for discontinuing unnecessary functions, for merging or transferring units for greater efficiency, preparing ultimately to liquidate what is left." This type action was originally recommended as a joint function of the Bureau of Budget and the Director of War Mobilization in the Baruch-Hancock report.

Let us hope that the new acting chairman of the WPB, Lt. Comdr. J. A. Krug, will continue the much needed "tightening up" of his part of the war agency machine to the end of increasing its efficiency.

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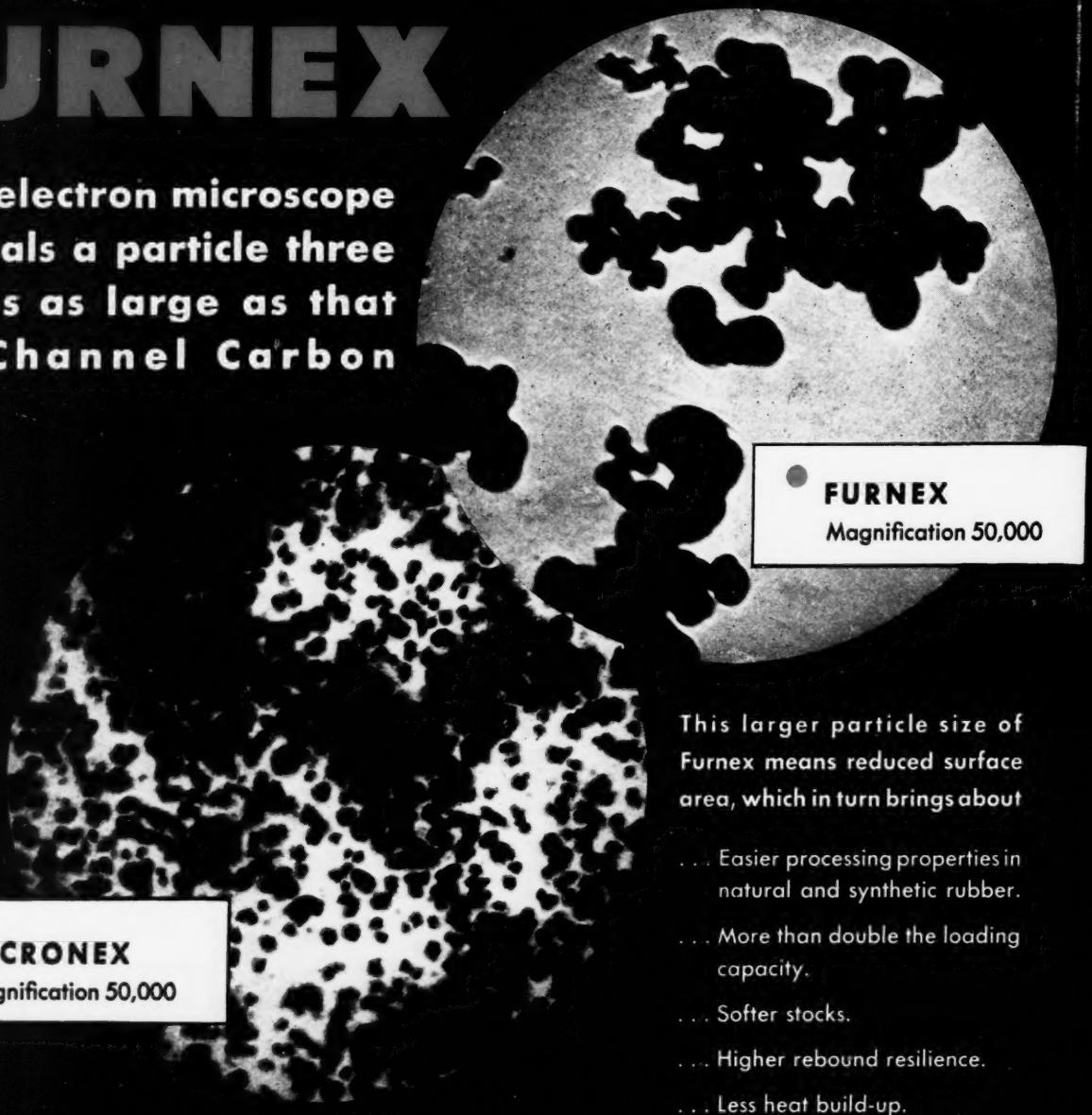

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Scientific and Technical Activities

New York Meeting of A. C. S.

ALTHOUGH there will be no meeting of the Division of Rubber Chemistry in connection with the New York meeting of the American Chemical Society to be held September 11 through 15, certain features of the meeting are of special interest to the rubber industry, and are repeated here for the consideration of those who may be able to attend part of this program or who may wish to investigate further some of the subjects being discussed.

The speaker at the subscription dinner to be held in the Grand Ballroom of the Waldorf-Astoria Hotel will be Bernard M. Baruch, and his subject will be "Chemistry and the Future." Because of his years of close association with national industrial activities including the rubber program during the present war, Mr. Baruch's treatment of this subject should provide some interesting observations.

Technical papers presented before various divisions of the Society which should interest rubber chemists and technologists are given below:

DIVISION OF PAINT, VARNISH AND PLASTICS—HOTEL BILTMORE

Sept. 11. "Polymerization of Vinyl Derivatives in Suspension." Mark and others.
"Structure of Copolymers." Wall.
"Influence of Side Groups on Structure of Linear Polymers." Baker and Fuller.

Sept. 12. "Report on Recent Progress in Cellulose Chemistry." Mark.

Sept. 13. "Polymerizable Esters of Lactic Acid, Alpha Carbalkoxyethyl Acrylates, and Methacrylates." Fisher, Dixon, and Rehberg.
"Resinous Plasticizers Derived from Sebacic Acid." Fligor and Summer.
"Emulsion Polymerization of Acrylic Esters." Fisher, Mast, and Smith.

DIVISION OF INDUSTRIAL & ENGINEERING CHEMISTRY—HOTEL PENNSYLVANIA

Sept. 11. Several Papers on 2,3 Butylene Glycol and One on "Utilization of Waste Liquors from Wood Hydrolysis." Othmer and others.
Papers on Pilot Plants in Chemical Industries. Vilbrandt, Barnebey.
Papers on Agitation and Mixer Performance. Rushton, Bissell, and others.

DIVISION OF PHYSICAL & INORGANIC CHEMISTRY—HOTEL PENNSYLVANIA

Sept. 11. "Molecular Weights and Weight Distribution Curves of High Polymers." Mark, Doty.
"Some Experiments on the Mechanism of Copolymerization." Mark, Alfrey.

DIVISION OF COLLOID CHEMISTRY—HOTEL PENNSYLVANIA

Sept. 13. Three Papers on Studies in Emulsion Polymerization — Styrene. Vinograd, Fong, and Sawyer.
"Relation among Intrinsic Viscosity, Molecular Weight, and Dimensions of High Polymers." Mark, Simha.

DIVISION OF ORGANIC CHEMISTRY—HOTEL PENNSYLVANIA

Sept. 14. "Effect of Temperature on Polymerization of Styrene." Cohen.
"Copolymerization of Styrene and Methyl Methacrylate." Mayo and Lewis.
"Influence of Divinyl Derivatives on the Polymerization of Styrene." Mark and others.
"Dimerization of Styrene in Aqueous Solution." Mark and others.
"Preparation and Polymerization of Acrylic Esters of Olefinic Alcohols." Rehberg and Fisher.
"Butadiene from Oxygenated Hydrocarbons." Egloff and Hulla.

DIVISION OF PETROLEUM CHEMISTRY—HOTEL NEW YORKER

Sept. 14. "Polymerization of Ethylene." Ipatieff and Haensel.

Semon 1944 Goodyear Lecturer

THE Goodyear Lecture Committee of the Division of Rubber Chemistry of the American Chemical Society has elected Waldo L. Semon, of The B. F. Goodrich Co., Akron, O., the Goodyear Lecturer of 1944 for his outstanding contributions to the chemistry and technology of rubber. It had been planned that this lecture be given at the fall meeting of the Division, but since the Division has cancelled this meeting, it is probable that Dr. Semon's lecture will be delivered in the spring.

Buffalo Meeting

THE Buffalo Rubber Group will meet September 21 at the Hotel Westbrook, Buffalo, N. Y., for dinner at 6:30 p. m. Dinner tickets are $1.75. The technical meeting at 8:30 will feature an address by D. F. Fraser, manager of the rubber division, Monroe Auto Equipment Co., co-author with J. V. Hendrick, of Chrysler Corp., of "A New Type of Injection Molding Process for Rubber and Plastics."

New York Group Meets Oct. 6

THE New York Rubber Group will hold its fall meeting October 6 at the Building & Trades Club, 2 Park Ave., New York, N. Y. The technical program, to start at 4:30 p. m., will feature two papers: one by D. F. Fraser, of Monroe Auto Equipment Co., and J. V. Hendricks, of Chrysler Corp., on "A New Type of Injection Molding Process for Rubber and Plastics"; and one by Capts. Harold B. Morris and C. H. Gerwels, of Chemical Warfare Service, U. S. Army, on "Variations of Physical Tests of Elastomers between Different Laboratories." Dinner will be served at 6:30 p. m., after which it is planned to demonstrate General Tire's method of improving carbon black dispersion in GR-S using the latex.

Tickets at $2.50 each may be secured from Peter P. Pinto, secretary-treasurer of the Group, at *Rubber Age*, 250 W. 57th St., New York 19, N. Y.

Committee on Adhesives Formed

COMMITTEE D-14 ON ADHESIVES of the American Society for Testing Materials was recently organized at a meeting at A.S.T.M. headquarters, Philadelphia, Pa., for the purpose of formulating specifications, methods of tests, and definitions of terms pertaining to animal, vegetable, mineral, and synthetic types of adhesives. T. R. Truex, principal wood technologist, United States Forest Products Laboratory, Madison, Wis., was appointed temporary chairman of the committee. Other temporary officers are: vice chairman, P. H. Bilhuber, Steinway & Sons; and secretary, Henry Grinsfelder, senior engineer, Resinous Products & Chemical Co. Other personnel of the committee include F. B. Detwiler, American Cyanamid Co.; C. L. Jones, Monsanto Chemical Co.; and J. W. Clough, E. I. du Pont de Nemours & Co., Inc.

Dewey to Receive Medal

BRADLEY DEWEY, the retiring Rubber Director, has been selected to receive the Chemical Industry Medal for 1944. This award is made annually by the American Section of the Society of Chemical Industry, and the candidate to receive the medal is selected by the executive committee, which constitutes the medal committee. The award, which will probably be made some time late in the fall, is being presented to Colonel Dewey for his work in colloid chemistry, especially as pertaining to rubber latex, and his accomplishment in administering the synthetic rubber program during the critical war period.

In September 1942, Colonel Dewey was appointed Deputy Rubber Director in charge of the technical part of the rubber program and in September, 1943, became Rubber Director after the resignation of William M. Jeffers. His accomplishments in administering the national rubber program are well known and need not be repeated here. The Rubber Director recently resigned and recommended the termination of the Office of the Rubber Director since the synthetic rubber plant construction program had been completed, and he felt that the remaining problems of the national rubber program could be carried out best now by a division or bureau of WPB with the help of its production executive committee.

American Section Officers

THE American Section of the Society of Chemical Industry has announced the election of Norman A. Shepard, chemical director of the American Cyanamid Co., as chairman and Frank J. Curtis, vice president of Monsanto Chemical Co., as vice chairman, to serve until July, 1945. Cyril S. Kimball and J. W. H. Randall were re-elected honorary secretary and honorary treasurer, respectively. The following were elected as members of the executive committee: J. L. Bennett, P. K. Frolich, F. D. Snell, W. B. Wiegand, and E. C. Williams.

Weather Resistant "Thiokol"

"THIOKOL" ST, a synthetic rubber recently developed by the Thiokol Corp., Trenton, N. J., is characterized by extreme low temperature flexibility without the addition of plasticizers. It is said to be the first successful solution to the problem of "cold flow" among the polysulphide synthetics. For it is claimed a marked resistance to the tendency of taking on permanent deformation under pressure or stress. The unpleasant odor commonly associated with the polysulphides has been reduced to an almost negligible factor. "Thiokol" ST is also reported to have excellent resistance to sunlight, ozone, and solvents. Its workability within a wide range of temperatures, without the addition of plasticizers which are readily extracted by aviation gasoline and hydraulic brake fluid, and its low volume swell in hydrocarbon fuels indicate its usefulness in the aviation and automotive industries for sealants, cements, and acid-resistant coatings. Commercial production is underway in both United States and Canadian Thiokol plants.

UNITED STATES

Tire Output Rise Probable; WPB Rubber Bureau Status Uncertain; London Parley Held

Ways and means of increasing heavy-duty tire production continued as a major war production problem during August. As a result of the efforts of the War Manpower Commission, the War Production Board, and management and labor officials, it appeared late in August that progress was being made in arranging for greater productivity from available manpower and for recruiting additional manpower from less essential industries and from the Armed Services by virtue of the latter's willingness to return certain tire builders to the tire manufacturing plants. Some of the general conclusions of a ten-week labor utilization survey of Akron's rubber plants were made public on August 17. Among the many statements made in this report, the following is of particular interest:

"The most significant conclusion of the WMC study is the fact that no standard pattern of production difficulties exists—the finger of blame cannot be pointed at any one evil in all companies. Neither do the surveys show the fault for under-utilization of workers to rest wholly on either management or labor. The responsibility for increased production rests on three sets of shoulders: management, labor, and government."

Tire Program Activities Numerous

Following a review of the entire heavy-duty tire situation by a full board of the WPB late in July, it was announced that it had been agreed that the Army's requirements for heavy-duty tires must be met at all costs, even though this involved serious risks in the field of absolutely essential civilian transportation. On July 30 all outstanding tire ration certificates issued prior to July 15 for truck or bus tires, size 8.25 or larger, were cancelled as of that date by the OPA, and beginning August 1 applications for these tires had to be made against a priority list furnished by the WPB. This list gave top ratings only to long-distance truck and bus lines, fire fighting, policing, public health, and mail services. Ratings were in order of essentiality numbered from 1 to 5, but only classes 1 and 2 were expected to obtain new tires; while the other ratings will probably have to depend on recapping.

The ODT at about the same time protested that the number of heavy- and medium-duty truck and bus tires for rationing during the current three-month period was "grossly inadequate to meet even the basic minimum requirements of essential rubber-borne transport services." A country-wide survey by this agency reported a comparatively large number of tank trucks and buses out of operation owing to inability to obtain replacement tires, and ODT stated that unless some means are found to alleviate the situation, this tire shortage "might well prove a home front calamity."

The Army through Lieutenant General Somervell in a talk, before the WMC management-labor committee, on shortages of essential war materials reported that although "on the whole" the Army was in fine shape with respect to supplies, there were about a dozen items which required special attention from the standpoint of manpower, among which were heavy-duty trucks, and in this connection the general said, "—— trucks can't roll without heavy-duty tires."

At a meeting in Washington on August 3 with executives of 29 tire manufacturers Charles E. Wilson, WPB executive vice chairman, called upon the tire industry to increase its output of heavy-duty bus and truck tires 30% during August and September to meet the critical shortage that threatens military operations and essential transport facilities at home. Major General Lucius D. Clay, director of material, Army Service Forces, in explaining the seriousness of the heavy truck tire shortage emphasized that with lengthening supply lines in France and non-existent rail transport, every ton of freight had to be moved by truck. Furloughing of soldiers over 30 years old who are not in the infantry, who have had one year's experience as heavy tire builders and mill room workers in the tire industry, and who are in this country was explained by General Clay as one of the Army's contributions to help out the manpower shortage. Mr. Wilson told the meeting that the WPB had issued an urgency rating for labor referral which will permit the WMC to give priority to the recruitment of workers for heavy-duty tire plants second only to that accorded a few secret projects.

Bradley Dewey, retiring Rubber Director, opened the meeting and later explained why it was desirable to discontinue the independent Office of the Rubber Director at the present time. Mr. Wilson informed the industry that WPB will establish a Rubber Goods Bureau in the Office of Operations Vice Chairman, L. R. Boulware. The bureau will be headed by J. F. Clark, who has been assistant deputy rubber director in the present organization. The change became effective September 1.

A visit by Mr. Boulware, Joseph Keenan, WPB's vice chairman for labor, and Clinton Golden, WPB's vice chairman for manpower requirements, to meet with management and labor officials in Akron on August 11 and 12 to seek moratoriums on union seniority provisions covering inter-departmental worker transfers and on tire wage rates and self-imposed worker production limits was cancelled when WMC protested in Washington that recommendations for action on these points were included in a WMC report.

In a statement and directive issued August 4 by Director of War Mobilization James F. Byrnes designed to "Provide Adequate Manpower for Essential War Production", ceilings were placed on labor permitted less essential industries in labor shortage areas in order to enforce better utilization of existing labor. The setting up of manpower priorities and the application of sanctions to enforce compliance with WMC rulings were indicated. Arrangements for the use of labor in the production of civilian goods in areas not suffering acute labor shortages according to WMC regulations were also included. Manpower deficiencies for truck and bus tire production totaled 4,751, with 26 plants throughout the country reporting. The deficiency for the Akron district was given as 1,081, and the shortage in the West Coast plants of the "Big Four" as 1,439. The Chicopee Falls, Mass., plant of United States Rubber Co. was reported to have a need of 700 tire workers. The Byrnes report emphasized that war production must be maintained at a high level until the last shot is fired, and that the responsibility for manning our war plants rests with the various communities in which they are situated.

WMC Tire Industry Survey

Some of the findings of the WMC's labor utilization survey of the tire plants began to leak out early in August, with considerable emphasis on the fact that if some means could be found to convince the workers to remove their "self-imposed" production limits, an increase of at least 10% in the tire output could be obtained. Copies of the report had been furnished management and labor officials, but it was not until August 17 that some of the general conclusions were made public. Officials of the international United Rubber Workers Union immediately recommended that its members accept the findings of the report and work out the solutions suggested with management representatives, but three of the local unions in Akron criticized the survey as being "inadequate and incomplete."

WMC labor utilization consultants presented the following reasons why tire production is not meeting demands:

(1) There has been an unanticipated heavy increase in schedule for heavy-duty tires in the past seven weeks. Experiences of the Armed Forces have definitely indicated changes in strategy which demand more and different types of tires to the extent that stockpiles no longer exist and movement of Army equipment is dependent directly on tire production. This situation has reflected on tire production because of the tremendous number of changes in demand which have been made by the ORD as a result of demands from the Armed Forces. Company production schedules are planned on a quarterly basis as the result of ORD releases to the industry, but owing to military requirements, individual companies have received hundreds of changes in demand during each quarterly period, thus preventing the type of production planning which will make for efficient operation.

(2) From a manpower standpoint, although there were continuing labor needs, the situation was well in hand until the sudden demand for heavy-duty tires late in June, thus developing an immediate shortage of husky males for work in the expanded heavy-duty program.

(3) While the problems of producing synthetic rubber may have been largely solved, the *use* of synthetics in the manufacture of heavy-duty tires and tubes is still being perfected. In certain phases of the tire manufacturing processes, the use of synthetic requires additional manpower. Failure of the quality of stock at various stages in the tire production cycle frequently results in lost man-hours and consequent loss of production. Frequent changes in both materials and methods throw jobs off established standards and further reduce productivity.

(4) There are too many unnecessary manpower demands in the Akron area in programs of less urgency than heavy-duty tire production. Akron must face the fact that a large portion of the manpower for producing tires must be recruited locally, undoubtedly at the expense of other local production, either within the rubber companies or in other companies in the area. The Smaller War Plants Corp. cooperated with the WMC on portions of the recent survey to determine the possibility of mov-

ing certain production out of the Akron area in order to release manpower for the production of heavy-duty tires. Although it was found that the moving of numerous contracts could be accomplished, only a relatively small proportion of these would make properly qualified manpower available. Steps are now being taken to remove such production from the Akron area. Steps are also being taken to eliminate recent increases in production schedules in certain local plants outside of rubber. Production demands were recently stepped up at one of these firms to the extent that approximately an additional 3,000 workers, includng 1,000 males, would have been required. Because of the urgency of the tire program, it has been necessary to take steps to rescind this demand so that all possible manpower may be diverted to tire production.

(5) Recent demands in the tire program have necessitated much greater emphasis on the hiring of males than was anticipated by the earlier production requirements. This, in turn, necessitates the recruiting of labor from outside the Akron area. Action has already been taken in obtaining clearance for recruiters from the companies who are traveling through 14 other states recruiting male labor for the tire program.

(6) Publicity to date has over-emphasized one or two factors, such as worker limits on productivity, as the reason for failure to meet production schedules and has not presented the true picture. The most significant conclusion of the WMC study is the fact that no standard pattern of production difficulties exists—the finger of blame cannot be pointed at any one evil in all companies. Neither do the surveys show the fault for under-utilization of workers to rest wholly on either management or labor. The responsibility for increased production rests on three sets of shoulders: management, labor, and the government.

It was further stated that the WMC surveys went into every phase of manpower utilization and that as the survey progressed, many recommendations were made to management and labor, and action has already been taken on a large number of these. WMC conclusions are that the following utilization factors are definitely affecting production—and that definite progress is being made on them:

(1) During the emergency period of the next 90 days, it is possible to increase the production of heavy-duty tires 10 to 15% by the raising of the limits or goals on individual production above existing levels. Such action, however, must be recognized by management and labor as abnormal effort volunteered by the worker to help break this production bottleneck. It must be definitely understood by all parties involved that production records made during the emergency should not be used as a basis for cutting rates, enforcing future speedup, or restudying jobs. The WMC surveys definitely brought into the picture that production limits were not the only reasons for lowered productivity during the past months. Such things as uneven flow of materials due to development problems, machine failure due to lack of maintenance crew manpower, and numerous other factors have lowered the individual tire worker's ability to produce. Most of these problems have now been met, and an increase in worker productivity should not, if properly coordinated, result in disrupting production flow, but should definitely tend to increase production.

(2) The system of payment of "past average" wages for jobs which has recently been changed and on which no new incentive rate has been adopted is a most serious limiting factor on production in certain companies. Where this condition exists, it has been found to decrease worker productivity in varying amounts from 30 to 60%. Management and labor are both opposed to this system, and definite steps have already been taken in one of the plants to prevent its further growth and to remove it from jobs on which it already exists.

(3) Absenteeism is a serious problem and is high throughout the industry. Absenteeism in many departments frequently disrupts the flow of materials, creating lost production in subsequent departments.

(4) With the exception of one company, much greater use could be made of women on jobs now being performed by men, thus freeing the male labor for transfer to the heavy-duty tire program. Not all male workers presently employed on jobs which could be done by women are physically qualified for transfer to the heavy-duty tire program. However, the number which could thus be made available is significant. Present union contracts contain seniority clauses and clauses regarding job bidding which prevent such transfer.

(5) Production scheduling and control of material flow to the tire building departments has been a major problem which has been aggravated by other factors such as absenteeism, increased use of synthetics causing product troubles, and the heavy changing demands made to management as a result of Armed Service needs.

(6) Turnover, although relatively low on an industry-wide basis, presents a serious problem in certain departments of a majority of the companies studied.

(7) Although training programs on the whole have been very thorough, there is a proven need of further training of both supervisory personnel and union committeemen in human relations. A number of the plants are planning expanded use of the job relations training program of WMC's Training-within-Industry Division.

(8) Although labor-management relations have improved materially over the past few years, need exists of closer cooperation on the problem of handling complaints at an early stage to prevent their becoming grievances, and of a more expedient handling of grievances.

The international URWA acting president, L. S. Buckmaster, in a letter to the presidents of all local unions in the tire plants suggested that "any and all artificial limitations on production that may have been established by individuals or groups be removed for the next few months at least and that a clear-cut understanding in writing be worked out with management representatives to the effect that the removal of such limitations on established piecework jobs will not be used as an excuse for reducing the piecework rates on such jobs or as a basis for the establishment of lower piecework rates on new jobs."

With respect to job transfer problems, Mr. Buckmaster suggested that local unions endeavor to reach an agreement with management to the effect that any seniority provisions in their collective bargaining agreements that tend to hamper or restrict the transfer of employes to jobs in the tire departments be temporarily set aside. Such an understanding should be worked out to facilitate the transfer of able-bodied men from their work on lighter and/or less essential products to the heavier work on tire production, and to provide for the full use of women on the lighter work. The URWA acting president's final paragraph was especially noteworthy:

"Your local union should take a forthright stand against any groups of workers or individual workers who refuse to fully utilize the machinery and other production facilities within the plant."

Although responses from some of the local unions outside the Akron area have been good, presidents of three of Akron's largest rubber unions sharply criticized the WMC survey. Shortages of material in the tire building departments, as reported by local union officials, and the reluctance of these officials and members to agree to even temporary removal of worker production limitations seemed to be holding up any very great increases in tire production as August drew to a close. In fact dissension within the ranks of the URWA became apparent when it was revealed that the Goodyear local had joined in the fight to oust Sherman R. Dalrymple, the international president now in France with other union officials viewing war production needs, when the URWA holds its convention in New York on September 18.

No official response by the local URWA unions was recorded until August 24 when the Akron Firestone local through its president, E. H. Little, announced that members meeting in a special session on August 20 had voted not to take action on the WMC recommendations until a committee of this local union had completed a detailed study of them.

CALENDAR

Sept. 10-15.	A. C. S. Fall Meeting. Hotel Pennsylvania, New York, N. Y.
Sept. 21.	Buffalo Rubber Group. Hotel Westbrook, Buffalo, N. Y.
Oct. 3.	Los Angeles Rubber Group, Inc. Mayfair Hotel, Los Angeles, Calif.
Oct. 3-5.	National Safety Congress and Exposition. Chicago, Ill.
Oct. 5-7.	SAE National Aeronautic Meeting and Engineering Display. Biltmore Hotel, Los Angeles, Calif.
Oct. 6.	New York Rubber Group. Building & Trades Club, New York, N. Y.
Oct. 6.	Boston Rubber Group.
Oct. 16.	Ontario Rubber Section. Royal York Hotel, Toronto, Ontario, Canada.
Oct. 26.	Northern California Rubber Group.
Nov. 27-Dec. 2.	Sixteenth National Exposition of Power & Mechanical Engineering. Madison Square Garden, New York, N. Y.

WPB and Army Try Further to "Sell" Tire Needs

Field representatives of the WPB's labor production division and Lieutenant Colonel Kenneth Johnson, of the Army Service Forces, began a campaign to "sell" the need of more tires now to the URWA local unions in Akron on August 23. Newspapers, radio, and billboards were to be used to convince tire workers that they should produce every tire possible during the next few months. Colonel Johnson made an excellent record in Akron as an expeditor some months ago, and he is reported to enjoy the respect of both labor and management in the tire plants.

DPC Funds for Tire Plants

It was announced early in August that the Defense Plant Corp. had authorized and would provide funds for the construction of two new tire plants, one at Des Moines, Iowa, to be operated by the Fire-

stone Tire & Rubber Co., and one at Topeka, Kan., to be operated by the Goodyear Tire & Rubber Co. In addition funds were allocated for the acquisition of part of the equipment of a General Tire & Rubber Co. tire plant at Waco, Tex., now under construction by that company. This project was reported to have been developed for the purpose of providing construction facilities for special "high flotation" truck tires, the equipment for the production of which very probably will have very little postwar value. It was for this reason that the use of government rather than private funds was considered necessary. Total cost of the project, which is supposed to get in production about January, 1945, was reported from various sources to be in the neighborhood of $4,000,000 for the Des Moines plant, $1,500,000 for the Texas plant modification, and $6,000,000 for the Kansas plant. The special "high flotation" tires to be manufactured at these plants have special wide treads for use with high-slung axles on soft ground.

The URWA immediately went on record as protesting the location of the two new plants outside of Akron, arguing that the plants would not be in production in time to help the war effort and that, meanwhile, the tires could be built in Akron.

London Parley Held

The international rubber parley between English, Dutch, and American representatives was held in London the first week in August. The American delegation headed by State Department officials, with rubber company and government rubber agency heads acting in an advisory capacity, was reported to have found that adequate information was lacking on which to base long-range plans, and it stated that such limited objectives as were decided upon concerned the short position between now and the time the rubber producing areas of the Far East are liberated. It is believed that all the conferees agreed in general that the use of rubber will have to be widely expanded if U. S. synthetic and Far East natural rubber production is to be absorbed.

Statements made by government officials following the return of the American delegation from abroad indicated that the industry advisory panel will meet at indefinite periods in the future on a purely informal basis to discuss new developments. No scheduled dates for future meetings have been decided.

WPB Changes Delay Rubber Bureau Set-up

Although Charles E. Wilson, WPB executive vice chairman, informed the industry early in August that a Rubber Goods Bureau in the Office of Operations Vice Chairman L. R. Boulware would be established following the dissolution of the Office of the Rubber Director on September 1, the resignation of Mr. Wilson on August 24 and the departure of Chairman Donald Nelson on a White House mission to China delayed confirmation of the formation of the Rubber Goods Bureau and of its new head, J. F. Clark, former Assistant Deputy Rubber Director. Plans in mid-August were understood to have called for the Rubber Goods Bureau to remain in the Municipal Center Building in Washington, with most of the Assistant Rubber Directors in charge of operations, product conversion, plant construction, and research continuing at their posts for one or two months and then returning to private business and acting only in a consultant capacity to the Rubber Goods Bureau. No official statement regarding the organization of the Rubber Goods Bureau could be obtained from Washington late in August, and with the announcement that Lt. Cmdr. J. A. Krug, a vice chairman of the WPB prior to his joining the Navy several months ago, had been appointed by President Roosevelt as acting WPB chairman, a decision on the Rubber Bureau will probably have to await its turn among the many other problems confronting the new WPB head.

Du Pont Denies Cartel Charges

E. I. du Pont de Nemours & Co., Inc., filed its answer on July 26 to a civil suit brought January 6, 1944, by the Anti-Trust Division of the U. S. Department of Justice and denied violation of the anti-trust laws in its relations with Imperial Chemical Industries, Ltd., of England and other companies abroad. The du Pont company stated that these relations benefited the American people by promoting scientific advance in chemical production while at the same time reducing prices to the public. The U. S. District Court for the Southern District of New York was requested to dismiss the suit.

One of the main points of attack in the government complaint related to du Pont's patents and process agreements with ICI. Admitting the existence of such agreements, the company said the purpose "was to encourage the interchange of technical information and to hasten and to aid du Pont's development of new and improved products and processes for sale primarily to American consumers and also in other markets of the world."

Denying any violation of law, the company declared: "The patents and secret inventions and secret processes which du Pont licensed pursuant to the various agreements hereinafter admitted were for products, inventions, and processes developed or acquired by du Pont at a substantial expense. The patents have been duly issued to du Pont, and du Pont has taken appropriate steps to protect its property rights in the secret inventions and secret processes. By entering into and carrying out the various agreements involving patents and processes hereinafter admitted, du Pont has lawfully exercised the rights inherent in its patents and secret inventions."

Agreements and transactions of du Pont with companies abroad over the last half century, which had been detailed in the bill of complaint, were dealt with individually in the 79-page answer, but the leading points of the company's reply were contained in a general affirmative statement. Answers are yet to be filed by Imperial Chemical Industries, Ltd.; Imperial Chemical Industries (New York), Ltd., and Remington Arms Co., which were also named as defendants together with various officers of the four companies.

Aluminum Co. of America, Pittsburgh, Pa., recently revealed that there is now ample aluminum and magnesium in excess of military needs, and the chief limitation on further expansion of civilian products in both fabrication and end-use manufacture is that of available manpower. Recent revisions of WPB orders broadened the permissible uses of both metals. "Background Data on the Postwar Planning Activities of American Magnesium Corp., a Wholly Owned Subsidiary of the Aluminum Co. of America", a recent compilation of source material on postwar planning in magnesium, suggests a much wider use of the metal in the chemical, transportation, and electrical industries and in many kinds of portable equipment.

The Aluminum Co., as part of its postwar sales program recently appointed three assistant general sales managers and four product managers. The former are R. V. Davies, R. B. McKee, and Donovan Wilmot. The new product managers are: Harry L. Smith, Jr., succeeding Mr. Wilmot as product manager of sheet; Hugo T. Wilder, succeeding Mr. Davies as product manager for ingot; R. B. Whidden, succeeding Mr. McKee as product manager for tubing and extrusions, and Wiser Brown, succeeding Mr. Smith as product manager for sand and permanent-mold castings.

Foreign Economic Administration, Washington, D. C., has issued "Current Export Bulletin No. 181: Revision of the General License for Shipments of Limited Value (GLV)", which embraces a wide variety of products including acetic acid, acetone, methyl alcohol, alkyd resins, antimony, automotive replacement parts, belting, chloroprene, cotton duck cloth and yarn, dibutyl phthalate, dimethylaniline, diphenylamine, hexamethylenetetramine and compounds, magnesium, methyl methacrylate, methylamine, mica, naphthalene, polyvinyl chloride, rubber, rubberlike compounds synthetic, unfabricated, including polymers and copolymers of butadiene, acrylonitrile, butylene, styrene, and vinylidene chloride, and zinc.

Special Report

(*Continued from page 655*)

which recommends that the Presidential Directive establishing the Office of Rubber Director be rescinded and that certain functions of this office revert to other agencies. Anticipating acceptance of my report, I have forwarded my resignation as Rubber Director to take effect September 1, 1944.

The tasks for which the Baruch Committee recommended the creation of the Office of Rubber Director by the President were unique: peculiar to a nation dependent upon rubber and suddenly cut off from its supply. These tasks have been accomplished. A synthetic rubber industry has been established and is in complete operation. It is providing the nation with an ample supply of rubber. From this point on, the problems incident to converting the new synthetic rubbers to goods essential on the military and home fronts are substantially the same as the more or less routine problems facing every great industry in wartime. With rubber itself no longer a problem, success or failure in the future will depend upon whether sufficient tire cords, carbon blacks and particularly manpower are provided to the rubber goods manufacturing plants.

The need no longer exists for a highly integrated, hard-hitting organization cutting across properly established lines of responsibility of many agencies and, in the words of the President's directive, handling the supervision of "technical research and development, importation, purchase, sale acquisition, storage, transportation, provision of facilities, conservation, production, manufacturing, processing, marketing, distribution, and use of natural and synthetic rubber, related materials, and products manufactured therefrom." It is time to liquidate this wartime agency created for a special purpose. The need for it has been met. Today's need is for manpower.

In submitting my recommendations, I emphasize that there is still work to be done if the country is to be kept on wheels. Above all, this must not be taken as a signal for waste of rubber or rubber tires by use or speed.

Very sincerely yours,

BRADLEY DEWEY,
Rubber Director

Rubber Goods Prices and Rationing Revisions

The Reclaimed Rubber Manufacturers Industry Advisory Committee met for the first time August 15 in Washington, with Lester V. Chandler, price executive of OPA's Rubber Price Branch acting as chairman, to discuss a price increase for the industry. The committee, receding from its original request, asked that OPA grant an increase of ¼¢ a pound for reclaimed rubber and that OPA review price levels at regular periodic intervals to determine if further adjustments are necessary. Following its customary policy of industry committee procedure OPA did not take immediate action, but took the committee recommendation under consideration.

The committee, which consists of: Carl Schaffer, vice president, Xylos Rubber Co., Akron, O.; Jean H. Nesbit, president, U. S. Rubber Reclaiming Co., Inc., New York, N. Y.; Allyn I. Brandt, vice president, Philadelphia Rubber Works Co., Cleveland, O.; Robert E. Casey, general sales manager, Naugatuck Chemicals Division, United States Rubber Co., New York; F. E. Traflet, vice president, Pequanoc Rubber Co., Butler, N. J.; Irving Laurie, general manager, Laurie Rubber Reclaiming Co., New Brunswick, N. J.; and Gilbert K. Trimble, vice president, Midwest Rubber Reclaiming Co., East St. Louis, Ill.; elected Mr. Nesbit chairman, Mr. Brandt vice chairman, and Mr. Traflet secretary.

New methods whereby manufacturers and wholesalers will determine their ceilings on elastic webbing, braid and cord are incorporated in Amendment 17 to MPR 220—Certain Rubber Commodities, effective August 14. The term elastic webbing has been broadened to include specifically elastic braid and cord. It had been previously construed to include braid and cord, but the specific listing is now made to avoid any possible confusion. Of the three elastic items concerned, webbing, the principal one, ordinarily is not sold at retail, although braid cord is. All three products are mainly used in making various clothing items, principally undergarments.

These methods, about which industry was consulted, will even out some extremely high and low maximum prices of manufacturers and will make no substantial change in the manufacturers' general level, but will substantially reduce the average of wholesale ceiling prices. The changes in the manufacturer's and wholesaler's ceilings have also been made not only because synthetic rubber is now being used for these items, but because existing provisions have resulted in a wide variety of ceilings, mainly because in the March, 1942, base month occurred reduced production and resulting scarcity. Manufacturers will determine their new ceilings by taking current synthetic rubber costs, March, 1942, prices of other materials and labor rates, and October, 1941, gross margins. Heretofore all three factors were based on March, 1942, levels, except synthetic rubbers, where August 1, 1943, prices were used. Wholesalers, heretofore under the General Maximum Price Regulation, but now under the same regulation as manufacturers for the first time, will determine their new ceilings by taking their net purchase cost and adding October, 1941, margins. Heretofore they used their highest March, 1942, prices.

Retail prices are not covered by Amendment 17, but will remain under GMPR, which generally establishes ceilings at the highest March, 1942, prices of each seller. However, as these items are now being made of synthetic rubber, compared with natural rubber in March, 1942, retailers should consult with OPA if they are not sure what their ceiling prices are under GMPR.

Shower curtains, typewriter feet, and typewriter keys are deleted from the list of commodities covered by MPR 220, as they are already under another regulation.

Rubber heels being made of higher quality by manufacturers because better materials are now available must be sold at the ceilings applicable since November 1, 1943, to lower quality heels, according to Amendment 7 to MPR 477—Sales of Rubber Heels and Soles in the Shoe Factory and Home Replacement Trades—and Amendment 15 to MPR 200—Rubber Heels in the Shoe Repair Trade—both effective August 3. No increase in ceilings is permitted for the higher quality heels because existing ceilings represent the prices of higher quality heels as sold in March, 1942. Lack of better-grade rubber has prevented the manufacture of higher quality heels since shortly after Pearl Harbor. The changes are accomplished by raising the minimum specifications of rubber heels for which specific ceiling prices are already established. Both minimum abrasions and tensile strength, indicative of wearing quality, are increased. Industry was consulted about these changes and generally approved them. No changes are made in prices at the retail level.

At the same time, manufacturers producing friction scrap soling material for new shoes may apply for a specific maximum price on material having a stitch tear test of 60 pounds, wet and dry. Heretofore such applications could only be made where the stitch tear test was 100 pounds dry and 85 pounds wet. The abrasion of 45 remains the same. This action automatically revokes a special adjustable pricing authority granted recently on sales of 60-pound stitch tear test material.

Order 26 under MPR 149—Mechanical Rubber Goods—makes adjustments in the ceilings for SLI hard rubber battery containers made by Joseph Stokes Rubber Co., Trenton, N. J.

Supplementary Order 94—Sales by Government Agencies and Resales by Certain Buyers—effective September 1, grants exemptions from maximum price control, continues existing ceilings, establishes maximum prices, and provides a procedure for obtaining ceilings or exemptions, for sales by the United States Government or its agencies of all commodities, except food, and for resales by certain private buyers of such commodities. The order also applies to sales of all commodities, except food, by a contractor or subcontractor where he has been authorized by the government agency to sell the commodities, and where the proceeds are paid or credited to the government agency. SO 94, however, does not apply to sales of any commodities by any government agency where the original purchase by the government was for resale in substantially the same form or for stockpiling; such commodities are to be priced by government agencies under applicable price regulations. Resales by private sellers are also governed by existing price regulations except by specific OPA authorization. Among products in the exempted list are synthetic rubber and components, gum for naval stores and gum naval stores, reclaimed synthetic rubber and components, crude rubber, guayule, and latex.

The following orders were published July 25 in complete and revised form: MPR 395—Maximum Prices in the Virgin Islands of the United States—and MPR 373—Maximum Prices in the Territory of Hawaii. Among the products covered are new, retreaded, and recapped tires, inner tubes, retreading, recapping, belts, dress shields, garters, rainwear, beachwear, brassieres, foundation garments, armbands, athletic supporters, suspenders, bibs, mats, curtains, cushions, pads and covers, umbrellas, footwear, phonograph records, automobiles.

Changes Affecting the Tire Industry

Amendment 2 to Order 14, RMPR 143—Wholesale Prices for New Rubber Tires and Tubes—effective August 3, adds maximum prices for several additional sizes to the tables giving ceilings for imported natural rubber passenger-car and truck tires and tubes.

Order 7, MPR 528—Tires and Tubes, Recapping and Repairing—effective July 22, pertains to the maximum retail price for a low platform trailer tire of Gates Rubber Co., Denver, Colo. Order 8, effective July 29, applies to maximum ceilings for a new industrial solid pressed-on tire made by the Firestone Tire & Rubber Co., Akron, O.; while Order 9, effective August 3, covers that company's 9.00-16, 10-ply Ground Grip Tread tire.

Order 10, effective August 10, establishes temporary retail ceilings for off-the-road tires made with rayon fabric, for the period August 10-October 15, 1944, at levels 112.5% of the established ceiling for the same type, size, and ply new tire made of cotton fabric.

Order 11, effective August 11, sets maximum retail ceilings for five sizes of new Stop-Start truck tires made by Goodyear Tire & Rubber Co., Akron, O.; while Order 12, effective August 16, covers the same company's new 11-38, 10-ply farm tractor rear tire.

Amendment 1 to MPR 528, effective August 19, makes several minor changes in the regulation. Exempted are sales in Alaska because conditions peculiar to the Territory necessitate framing of special provisions for these sales. Meanwhile ceilings are under MPR 194, the Alaska regional regulation. Then, as previous ceilings were below factory costs, maximum prices for recapping five large-size truck and bus tires with road grader type of tread have been upped.

Besides, maximum retail prices for synthetic special-purpose tubes will be provided upon application to OPA in Washington. These puncture-resisting tubes were not previously made; so they were not mentioned in the original order. Amendment 1 also includes specific retail ceilings for a new motorcycle tire and tube size and for three new farm-tractor tire sizes. Finally, various parts of MPR 528 are reworded for clarification or to correct minor errors; but these changes do not affect prices or pricing methods.

Order G 12 under 1499.3(c) as amended of GMPR covers ceilings for retail sales of certain continuous and non-continuous tread tires in designated western states.

The Manufacturers' Tire & Tube Industry Advisory Committee met with OPA officials in Washington, August 16, to consider price structures. The committee also unanimously elected as new chairman Irving Eisbrouch, vice president in charge of tire sales of The Dayton Rubber Mfg. Co., Dayton, O., to succeed R. S. Wilson, vice president of Goodyear Tire & Rubber Co., Akron, O., who resigned after a year as the committee chairman. Other elected officers of the committee are: vice chairman, J. J. Newman, vice president, The B. F. Goodrich Co., Akron; and secretary, Earl McCreery, sales manager Lee Rubber & Tire Corp., Conshohocken, Pa.

Supplementary Directive 1Q, as Amended July 22, 1944, is devoted to further delegation of authority by WPB to OPA with

reference to the rationing of tires, casings, inner tubes, retreading and recapping materials, and gasoline.

The following amendments were recently added to RO 1A—Tires, Tubes, Recapping and Camelback. No. 81, effective August 2, permits equipping farm vehicles with used truck tires, if any are available; previously such vehicles had been eligible for industrial, tractor-implement, and used passenger tires. In case of conversion of steel wheels of farm vehicles to rubber tired wheels, approval of the conversion must now be obtained through the appropriate county or state committees of the WFA before tires may be issued for these vehicles.

Amendment 82, also effective August 2, provides that dealers who discontinue the sale of tires may transfer the replenishment portions of their tire certificates if the person to whom they are transferred expects to continue to sell tires at the same establishment. The next amendment, effective July 30, cancels all outstanding tire rationing certificates dated July 15 or earlier for trucks and bus tires size 8.25 and larger.

Amendment 9, RO 1B—Mileage Rationing: Tire Regulations for Puerto Rico—effective August 1, extends eligibility for new passenger-car tires and tubes and revises regulations on tire inspections.

The number of large truck and bus tires allotted to OPA for rationing in August was the smallest since rationing began. This quota of 60,000 of size 8.25 and larger, including reserves held at national, regional, and district offices, was far below the total required to provide tires for all trucks and buses needing them and was less than half the quota of 135,000 certified for July. Consequently OPA authorized district offices to form temporary emergency truck tire rationing panels to pass upon applications and issue certificates for heavy truck and bus tires, since the total quota was too small for effective division among the country's 5,500 local War Price and Rationing Boards. Under this temporary plan, truck and bus operators will continue to apply for tires to their local boards. Instead of the board passing finally on the applicant's need, however, the application will be routed to a special truck tire rationing panel.

During the previous four months the quota averaged between 125,000 and 130,000 heavy-duty truck tires monthly. ODT estimated that a minimum of 165,000 large-size tires are needed each month during the third quarter to keep the present number of trucks and buses on the road.

Quota for smaller-size truck tires was also reduced for August, but the cut was not so severe, and applications for tires of sizes smaller than 8.25 will continue to be processed through the local board tire panel, as heretofore. August quota of these smaller commercial tires was 280,000, against 375,000 for July. Here, too, most careful screening of applications is necessary, OPA said.

Total August quotas for new passenger-car and motorcycle tires and tractor-implement tires were about the same as for July.

The OPA was advised by the ORD that the reasons for the drastic cut in heavy-truck tire quota are threefold: (1) A shortage of manpower skilled in the manufacture of these large-size heavy-duty tires. (2) An increase in the number of large-size airplane tires, resulting in a diversion of materials and manpower from the production of truck tires. (3) An increase by the military services in their demands for large-size tires, particularly the very large sizes (12.00 and over). Approximately 98% of production of these tires has been allocated to the Armed Forces.

Following is a tabulation of August quotas and reserves by type of tires (total figures for July are shown for purposes of comparison):

Type of Tire	Quota Reserves	Total Allocation for August	Total Allocation for July
Passenger and Motorcycle:			
Grade I (new tires) ..	1,776,160	173,840	1,950,000	1,950,000
Truck and Bus:			
Tires — 7.50 or smaller .	254,400	25,600	280,000	375,000
Tires — 8.25 or larger ..	44,840	15,160	60,000	135,000
Tractor-Implement:			
Tires — 7.50 or smaller .	41,400	13,600	55,000	60,000
Tires — Larger than 7.50	18,400	4,600	23,000	23,000

A supplemental large truck and bus tire quota of 25,000 was authorized by the Rubber Director for August rationing on August 10 because of slightly increased production. These additional tires of size 8.25 and larger brought the August quota to a total of 85,000, still far short of the 165,000 large tires which the Office of Defense Transportation estimates are needed for replacement monthly during July, August, and September, OPA pointed out.

Army Procurement Changes

War Department Procurement Regulations, originally issued September 5, 1942, has been published in full, incorporating all changes to date, in the July 22 issue of the "Federal Register." Among points covered are: price adjustment for costs of natural and synthetic rubber; exemption from "Buy American Act" of articles of clothing using rubber; contracts for recapping and retreading tires, and repairing tires and tubes; mandatory schedules, including tire chains, automotive storage batteries, telephones and parts, and airplane tires and tubes, disposition of current production scrap, rubber working machinery, rubber fabricated materials and products, insulated wire and cable, crude rubber and allied gums, and latex; federal excise taxes on tires, inner tubes, and sporting goods; minimum wage determination for rainwear, chemicals (including synthetic rubber), footwear, and dental goods industries; contracts involving purchase of rubber or synthetic rubber; interchange of patent rights and industrial information; price regulations; restrictions on purchases of selected items for the duration, including rubber cushions and mats; renegotiation and price adjustment; termination of contracts; and appeals from R-1.

Procurement Regulation 11 last month was issued with the following amended paragraphs to its Subpart F—Contracts Involving Rubber or Synthetic Rubber:

"§ 811.1150 *Agreement with Rubber Reserve Co.* . . .

"(4) The War Department will pay Rubber Reserve Co. the difference between these amounts and the prices fixed by Rubber Reserve Co. specified in subparagraph (1) above, or such lower prices as the Rubber Reserve Co. may fix from time to time. This contract will remain in force until 30 June 1945 unless extended by the War Department or terminated on 90 days' notice before that date.

"2. Section 811.1151 (c) is amended to read as follows:

"§ 811.1151 *Administration of agreement.* . . .

"(c) The chief of each technical service has been directed to make available to the Ordnance Department by special allotment or otherwise sufficient funds to cover the estimated amounts payable to Rubber Reserve Co. under this agreement with respect to its contracts and subcontracts up to 30 June 1945. The Chief of Ordnance is authorized to issue such directives or instructions to the chiefs of the other technical services as he deems necessary for the administration of the agreement and the furnishing of such allotments."

Wilfred L. Larkin, treasurer of the Boston Woven Hose & Rubber Co., Cambridge, Mass., has been elected president of the Boston Control of the Controllers Institute of America, New York, N. Y.

The National Boot & Shoe Manufacturers Association, in discussing the current critical shortage of sole leather, broke down production of two five-month periods for this year and last to show the increased usage of rubber soles, as follows:

Rubber Soles for	% of Sole Output 1944	1943
Men's dress shoes	24	11
Work shoes	67	62
Youths' and boys' shoes	73	52
Women's and growing girls' shoes	20	9
Misses' and children's shoes....	33	24

Truck Tire Tests by ORD Fleet

The Government Tire Test Fleet operating at San Antonio, Tex., has completed an exhaustive series of tests on the effect of overloading on three popular sizes of civilian highway truck tires—7.00-20 (10-ply), 9.00-20 (10-ply), and 11.00-20 (12-ply)—on rear drive wheels, ORD announced August 11. These comparative tests include a total of 148 tires, run at various speeds, and the results clearly show the marked extent to which tire mileage is reduced by overloading at 30% above the Tire & Rim Association maximum recommended loads.

The table below gives the ratings obtained from this testing.

The Government Tire Test Fleet has been in operation since May, 1943, in and near San Antonio and is financed by the United States Government and operated under the direct supervision of the Office of Rubber Director, War Production Board.

Incident to the testing of various types of synthetic tires, it has been necessary to vary the conditions under which the tests are made. Among other variables carefully checked, one very important factor is, naturally, the overload percentage based on Tire & Rim Association tables. As these tests have been carried out under the most carefully controlled conditions and are averages of a sufficient number of tires of varied makes and types, the results of these load comparisons may be considered accurate and authoritative, the announcement said.

	Rating for Treadwear (Design Wear)		Rating for Carcass Durability (Blowouts, Separations, Etc.)	
	T&R Max. Recmd'd Load	30% over T&R Max. Load	T&R Max. Load	30% over T&R Max. Load
Average of all truck tires included in comparative tests	100	84	100	33.3

R-1 Revised Again

Owing to the increased availability of high-tenacity rayon cord, WPB will extend use of synthetic rubber from the present rate of 70% to 90% of medium and highway truck tires. On special-purpose tires the synthetic use increase will be expanded to 35% synthetic. All truck-tire tubes are authorized total synthetic use, and a large percentage of airplane tire inner tubes will be converted to synthetic.

The situation concerning neoprene is relaxed considerably, and the use of this commodity in all wire cable is authorized. Crude rubber use for this purpose is further restricted. Neoprene, furthermore, will be released for use in elastic thread after September 1.

Unrestricted use of Buna N also is now permitted in wire and cable applications.

Rubber Order R-1 has been further amended concerning Buna S, reclaim, and scrap rubber to extend their authorized use subject to manpower limitations in areas where production requests are made. Applications for use of this all-purpose rubber are to be made to WPB field offices. Applications should be made on WPB Form 2242 and the manpower Form 3820.

Appendix IV (Tire Allotment Plan), as amended August 1, to R-1, contains changes in sizes of Group B and B-1 tires under the section dealing with allotments to claimant agencies. Now Group B includes pneumatic tractor-implement-type tires over 21-inch rim diameter and also size 9.00 by 16, in all treads for use on any vehicles or equipment. Formerly the group included only pneumatic tractor-implement-type tires over 7.50 cross-section in all treads; while Group B-1 included large-size tires over 7.50 cross-section. The latter group now, however, covers tires over 21-inch rim diameter and size 9.00 by 16.

Because the increased demand for easy-processing channel carbon black has reduced output in the channel black industry by approximately 15%, the WPB Chemicals Bureau has requested the rubber industry to replace its easy-processing channel black requirements with medium-processing channel black to the fullest possible extent. Where this substitution is not possible, Chemicals Bureau suggests a blend with semi-reenforcing furnace or high modulus furnace, or use of high modulus alone. Officials said that this could be done without any loss in quality in the finished product and, in many cases, would result in an improvement.

Owing to the greater demands, Chemicals Bureau in many cases had to deny or cut August allocations for channel carbon black. This situation is expected to be cleared up by the year-end, officials explained, since new production of both channel and furnace carbon blacks is scheduled to be brought in each month throughout the rest of the year. However, enough carbon black is now being produced and in stock to meet 1944 requirements fully, it was asserted. Since January 1, 1944, production of all grades of furnace carbon black has been increased from less than 100,000,000 pounds a year to more than 430,000,000 pounds a year. When the present program is completed in the early part of 1945, production will be at a rate of 625,000,000 pounds a year. Channel black production also is being increased monthly. By March, 1945, it should be at a rate of more than 600,000,000 pounds a year, bringing the grand total of more than 1,200,000,000 pounds a year of all black for the rubber industry.

Chemicals Bureau officials said that short supplies of natural gas and state restrictions have delayed production of easy-processing black to such an extent that 1945 rubber requirements for this black have been reduced by 50,000,000 pounds. This cut has been balanced by an increase of the same amount in the requirement for furnace black.

Preference Rating Order P-146—Fiber Shipping Containers—was amended August 2. Among the products listed with ratings to secure these containers are: household cements and adhesives (AA-5), furnace-type and channel-type carbon black (AA-2), high-tenacity tire-type rayon yarn (AA-1), vinyl polymers and copolymers (AA-2), closures for glass jars for home canning (AA-2X), natural and synthetic rubber and products thereof (44 items, ranging from AA-1 to AA-5), cotton fabrics and yarn (AA-2X), shoe adhesives (AA-3), tire cord and fabrics (AA-1), chewing gum (AA-4), plumbing accessories (AA-5), safety equipment, clothing, and devices (AA-2X), sporting goods (AA-4), toys and games (AA-4).

Rules permitting WPB field offices to authorize the manufacture of civilian-type products under certain specific conditions so as not to interfere with the war effort are contained in Priorities Regulation No. 25, issued August 15. Among the orders and products affected are: L-158, Automotive Replacement Parts; L-180, Replacement Storage Batteries; L-270, Automotive Maintenance Equipment; L-5-C, Domestic Mechanical Refrigerators (except electric); L-18-b-Domestic Vacuum Cleaners; L-65, Electrical Appliances; L-227, Fountain Pens and Mechanical Pencils; L-39, Fire Protective, Signal and Alarm Equipment; L-54-a, Typewriters; L-201, Automotive Tire Chains, Tractor Tire Chains and Chain Parts; U-8, Order Limiting the Manufacture of Telephones.

Alkyl amines have been made subject to General Allocation Order M-300, starting October 1. Their distribution has been controlled by directive.

The following allocation orders have been revoked, and their respective products transferred to M-300: M-75—Diphenylamine; and M-105—Naphthalene.

M-300, as amended August 7, raises the small order exemption for pine tar to 54 gallons a month and removes allocation control of glycols. This action is due to increased production facilities and improved imports.

The Bobbin & Spool Manufacturers Industry Advisory Committee met in Washington, July 24, to discuss the tire cord program, the manpower situation, and the availability of materials. The construction phase of the tire cord and high-tenacity rayon program was transferred June 1 from the WPB Tire Cord Branch to the Office of the Rubber Director, the committee was told. R. W. Alger, Office of the Rubber Director, who is supervising the twisting and weaving equipment installations under the program said that schedules on all equipment were being met and emphasized that the amount of cord which can be produced depends to a large extent on the spool supply. Although no grave difficulty existed in obtaining materials, the manpower situation in this industry is extremely serious, committee members revealed.

Signal Corps Saves on Rubber

More than 12,000,000 pounds of crude rubber were conserved by the Signal Corps in the first four months of 1944 through the use of synthetics and alternate materials. This saving represents enough crude rubber to manufacture 150,000 passenger-car tires. One of the major results has been that monthly Signal Corps requirements for crude rubber have been reduced from 2,626,000 pounds in June, 1943, to approximately 800,000 pounds in April, 1944.

The largest savings have been effected through the use of substitutes in field wire and telephone cable assemblies. Further changes in design and production techniques are steadily decreasing the use of rubber in Signal Corps equipment.

Before the war the technical requirement of practically every insulation application was conditioned upon the use of rubber. Then the shortage of rubber and latex compelled an abrupt conversion to alternate materials to meet the insatiable and immediate war demands. Signal Corps requirements for thousands of products of the rubber industry necessary to the fabrication of approximately 70,000 items increased with extending military operations. Wires, cables, cordages, handsets and headsets, terminal and connecting blocks, shock mounts, vibration dampers, lineman's gloves, jacks, battery jars, microporous separators, meteorological and other balloons, electrical tape, rubberized fabrics, hose, belts—these and thousands of other applications of manufacture by the hard and soft rubber trade immediately became the subject of study. Intensive research was conducted both in Signal Corps laboratories and in the product industries; new techniques were adopted, and new facilities discovered. Many developments awaited the wartime urgency to bring them out of the laboratory stage and permit field testing before final approval and initiation of production.

It was first believed that some alternate materials would not be so highly satisfactory in actual field use as was crude rubber. But in some instances the substitute material not only proved equally suited to the use intended, but developments in application and improved technique of fabrication, while reducing labor and material costs, actually enhanced the military characteristics of certain equipment.

W. R. Hucks, with the operating division of the Rubber Reserve Co., Washington, D. C., since 1942, has been named production manager for all the government synthetic rubber plants. He was formerly manager of the raw materials division of The B. F. Goodrich Co., Akron, O., before taking on the government assignment.

Frederick M. Daley, president, Sponge Rubber Products Co., Derby, Conn., is a member of the subcommittee on finance of the peacetime planning committee of the National Association of Manufacturers, 14 W. 49th St., New York 20, N. Y.

Office of Defense Transportation, Highway Transport Department, Maintenance Section, Washington 25, D. C., recently issued the booklet, "How to Prevent Roadside Flat Tires", which outlines in detail a simple method for detecting slow leaks in tires of automotive vehicles so as to minimize the possibility of "flats" along the highways. The method advocated seems similar to the one demonstrated[1] in December, 1942, by A. Schrader's Son Division of the Scovill Mfg. Co., Brooklyn, N. Y.

Passenger carriers under the jurisdiction of the Highway Transport Department are saving more than 824,000,000 rubber-tired vehicle miles annually and have saved the equivalent of 44,300 vehicles by cooperating in the conservation of transportation, ODT announced July 31.

[1] "Important Tire Conservation Method Revealed." India Rubber World, Jan., 1943, p. 393.

EASTERN AND SOUTHERN

B. R. Newcomb

John Waldron Corp., builder of industrial processing machinery, New Brunswick, N. J., has elected B. R. Newcomb president. Mr. Newcomb was formerly with the Worthington Pump & Machinery Corp., and more recently with the American Optical Co. S. N. Finney and F. W. Egan, both long associated with the Waldron organization, have been elected vice presidents of the corporation.

Du Pont Executive Changes

A. Felix du Pont, vice president of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del., retired August 1 as a member of the finance committee, but he will continue as a member of the board of directors.

Edward B. Yancey, general manager of the explosives department, at the board meeting August 21, was elected a vice president and member of the executive committee. William H. Ward, assistant general manager of the explosives department, was then named general manager.

Emile F. du Pont, production director of the nylon division and a director of the company, succeeds A. Felix du Pont on the finance committee.

Additional organization changes announced following the board's session follow. Fin Sparre, director of the development department, who retired August 31, remains, however, on the directorate. He is succeeded by Ernest K. Gladding as director of the development department.

T. C. Davis, assistant comptroller, was made an assistant treasurer to head the treasury division of the treasurer's department.

The firm last month also announced development of a three-ply transparent plastic enclosure with a tendency to self-seal flak and bullet holes in pressurized B-29 super-fortress cabins. The shatter-resistant plastic utilizes "Butacite", polyvinyl butyral resin, as the interlining substance. Bullet holes close almost completely because of the rubber-like nature of the "Butacite" interlayer. The outer layers are of "Lucite", methyl methacrylite resin. A special adhesive was developed to accomplish the lamination. Holes can be quickly patched in flight if necessary to maintain pressure. Laminated "Lucite-Butacite" bomber noses, gun turrets, or blisters are not demolished when pierced by bullets or flak. This has made possible pressurization of cabins with superchargers which maintain nearly normal ground-level atmospheric conditions. Protected from the sub-zero stratosphere B-29 crews can operate without oxygen masks at high altitudes.

Intercontinental Rubber Co., 745 Fifth Ave., New York 22, N. Y., in its semi-annual report to stockholders revealed that during the first six months this year its Mexican operating subsidiaries produced 7,174,800 pounds of guayule rubber, as compared with 7,001,600 pounds for the same time last year. The supply of wild guayule, moreover, is fast being exhausted, and every effort is being expended to perpetuate the business with cultivated shrub.

Frank H. Seely, for a number of years industrial aromatic salesman for Givaudan-Delawanna, Inc., 330 W. 42nd St., New York 18, N. Y., was operated on at Doctors' Hospital, New York, on July 11, for a serious cyst and fistula. He is now convalescing at his home, 172 Trenton Ave., Clifton, N. J., and expects to resume calling on the trade about October 1.

Pennsylvania Rubber Co., Jeannette, Pa., has added handballs and squashballs to its sporting goods line. Two hardballs, the Navy ball with a 2¼-inch diameter and the official-size ball, will be made. The squashball will be regulation size. Volume production is expected to be attained in advance of the autumn and winter playing season. H. W. Jordan, president, announced that the company produced more tennis balls during the first six months of 1944 than in any full year since 1941. A high percentage of the record production has gone to the Armed Forces. The 1944 Pennsylvania ball has a longer wearing cover than any previously made.

American Petroleum Institute, 50 W. 50th St., New York 20, N. Y., has postponed indefinitely its twenty-fifth annual meeting originally set for November 13-16 in Chicago, Ill. This action followed the request of the Office of Defense Transportation that all conventions planned for the balance of 1944 be cancelled in the interest of wartime transportation.

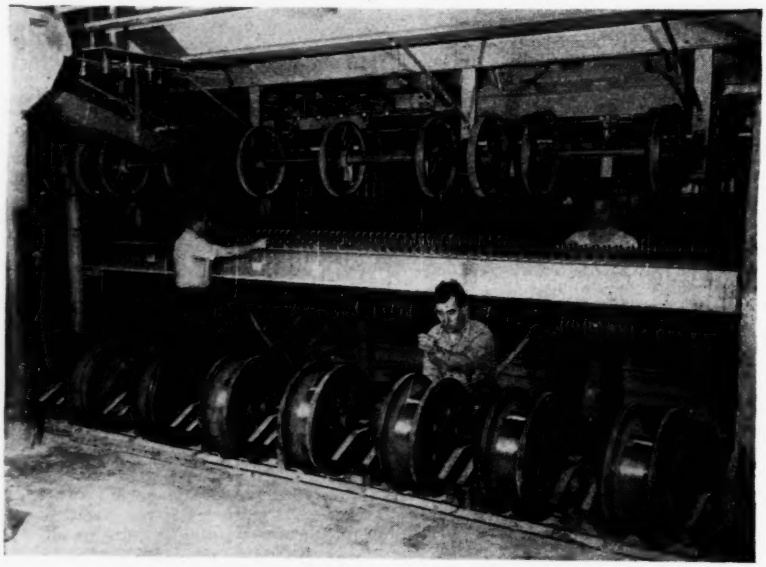
U. S. Rubber Reports

Chairman F. B. Davis, Jr., in the semi-annual report to stockholders August 1 revealed that United States Rubber Co.'s $25,000,000 program to increase tire facilities for military requirements and for essential civilian needs is nearing completion. The enlarged Fisk plant at Chicopee Falls, Mass., has just been placed in operation, and the reconversion and expansion of the Eau Claire, Wis., factory will be finished soon, Mr. Davis reported. With its higher tire output the Fisk plant will produce approximately 15,000,000 pounds of tire materials monthly, nearly double its previous capacity.

U. S. Rubber is erecting a one-story steel and brick structure, about 50 by 110 feet, at its Indianapolis, Ind., plant for use as a cement house, to be in operation early in October. Modern in every detail, with every necessary safety device, the plant will feature a ventilating system to exhaust 16,000 cubic feet of air a minute; air in the building will be completely changed nine times an hour. U. S. Rubber recently completed a similar cement house at its Fisk plant at Chicopee Falls, Mass., and another is due for early operation at the Eau Claire, Wis., factory. These additions are necessitated by the fact that synthetic rubber tires require more cement in their manufacture than do natural rubber tires.

The first batch of synthetic rubber latex was produced on July 25 at the Los Angeles plant of U. S. Rubber, operated under authorization by the Rubber Reserve Co. It is planned to produce enough of this vital rubber product to supply all needs of Pacific Coast rubber factories.

Stanley W. MacKenzie has been appointed director of purchases of U. S. Rubber to succeed George M. Tisdale, recently



Lower Portion of Rubber Latex Tower at U. S. Rubber's Bristol Plant; Three Men Insure Proper Operation

elected a vice president and member of the executive committee of the company. On leaving the Army in December, 1918, Mr. MacKenzie became connected with the tire business as a salesman in Des Moines, Iowa. Two years later he returned East and joined the U. S. Rubber organization in New Haven. In 1932 he became purchasing agent of the mechanical division at Passaic, and eight years later his duties were enlarged to include supervision of purchasing and inventory control at such plants as Bristol, Providence, and Sandy Hook. Mr. MacKenzie was made assistant to the director of purchases in 1941.

F. D. Chittenden, formerly chief chemist at the Government GR-S plant at Institute, W. Va., being operated by U. S. Rubber, was recently made assistant technical coordinator of the company's synthetic rubber division. His duties will include inspection of the three government synthetic rubber plants at Torrance, Calif., Naugatuck, Conn., and Institute. Dr. Chittenden will make his headquarters at Naugatuck.

Production Increases for Latexed Wire Revealed

U. S. Rubber has produced at its Bristol, R. I., plant more than 4,178,000,000 feet of single conductor wire during the past 2½ years, of which about 2,567,000,000 feet were of the assault type used as a conductor in front-line war communications. The total was more than the 1941 combined industry production of building wire. In 1942 more than 1,202,000,000 feet were made at the Bristol plant, and in 1943 the total was 2,115,000,000 feet. All the wire was produced by a method, developed at the Bristol plant, which uses a liquid rubber latex and accurately centers the conductor within the insulation. Coagulation and drying are accomplished in one operation. Diamond dies reduce the wire to desired size before it is run through a tinning process which insulates it against corrosion from the outer insulating material. The outside diameter of the latexed wire is 33% smaller than ordinary wire. Before factory approval the wire is tested according to stringent government regulations. A dielectric strength test measures the voltage required to puncture the rubber insulation. In a submersion test reels of insulated wire are covered with water for periods up to 24 hours and 1,500 volts of electricity passed through it. Meters detect leakage in the conductor and in the lead casing which encloses it.

Another development of the company, recently announced by C. W. Higbee, manager of the wire and cable department, is Nuban, a synthetic rubber latex insulation for power, lighting, and communication cable. It is made by the latex continuous dip method from a modified Buna S polymer of special styrene: butadiene ratio. The polymer is prepared by a modified reaction technique, said to give it improved processing and insulating properties. Good aging qualities are attributed to the presence of special antioxidants, and it will resist severe wear, it is claimed, because by the nature of the latex process the rubber particles are not distorted or broken down by milling. After 96-hour aging in an oxygen bomb, tensile strength is reported as 2000 pounds and elongation two to eleven inches. Voltage breakdown after submersion in water at room temperature was 650 volts/mil, and insulation resistance constant K under the same conditions was 54,000. After three days in water the specific inductive capacity at 70° C. was 3.2. The insulation is said to be exceptionally homogeneous following vulcanization. Other qualities include maximum conductivity, minimum diameter, flexibility, impermeability to water, and perfect centering of the conductor.

OHIO

Schulman Rebuilding after Fire

A fire which caused damage and loss estimated at $350,000 swept through the plant and storage yards of A. Schulman, Inc., 790 E. Tallmadge Ave., Akron, on August 3. The blaze was one of the worst that has occurred in Akron in many years with a toll of some 55 persons, firemen and others, injured.

Work has already started on clearing up the debris and replacing the Schulman plant, a comparatively new and modern one, with buildings and equipment even more up-to-date.

Additional Tire Factory for Firestone in Iowa

Firestone Tire & Rubber Co., Akron, announced last month that contracts for its new heavy-duty tire plant at Des Moines, Iowa, have been placed, and construction will get under way immediately. The plant will be operated by Firestone for the Defense Plant Corp. Land and buildings will cost approximately $1,750,000. An additional $3,000,000 will be spent for machinery and equipment.

The plant is one of two recently authorized by the government to increase production of heavy-duty military tires. The Firestone operated plant will manufacture tires of sizes 10.50 by 18 to 14.00 by 20.

Firestone has arranged with its banks, through The National City Bank of New York as clearing bank, a three-year unsecured revolving credit in the amount of $75,000,000 at interest rates ranging from 2% to 2½%. This credit is to take care of any financial requirements during the remainder of the war and through the settlement of war contracts and into the period of production for civilian needs.

L. W. Fox has returned to Firestone's Akron offices to act as manager of the field engineering division of the tire development department. During the past 2½ years he has represented Firestone in Washington, D. C., and Detroit, Mich., as military service engineer.

J. G. Kreyer has returned to his former position as manager of Firestone's farm tire development department. He had left that department two years ago to work on the development of pneumatic boats, life rafts, vests and belts, pontoons, and other "flotation gear" for the Armed Forces.

Firestone recently announced progress on a series of experiments on a new method of tire body and tread making in which compounded liquid rubber or latex, natural or synthetic, is spread and dried directly on the cord body fabric. Milling the solidified rubber and calendering it to the fabric are thus eliminated. In making the tread the compounding materials are first added; then the latex is dried into a firm, solid unit and applied to the tire body. J. W. Thomas, chairman and chief executive of the company, said that tires made by the new method are not yet equal in mileage to those made in the conventional way, but he indicated that results justify continued research.

General Tire in Chile

Third General Tire associate company in Latin America, Industria Nacional de Neumaticos, S. A., will be opened in Santiago, Chile, September 7, according to Joseph Andreoli, vice president of General Tire Export Co., Akron, O. In normal times, the factory will turn out enough tires to supply the entire needs of Chile, Mr. Andreoli said. He and C. F. O'Neil, a director of the company, will take part in the opening ceremonies.

Production for the balance of the year however, will be limited to essential truck tires in order to ease the strain on Chile transportation system.

Fred Comey, of General's engineering staff, already is in Chile after appointment as factory manager. He has had long experience in tire research and manufacture. The Chile plant will rely on General Tire for all technical supervision. Clarence Perkins will serve as commercial manager; he has been with the company 12 years and has spent many years in Latin America. Logan Molenauer will be chief chemist; Diego Ybarra will be chief engineer, and Carroll Ogden will serve as general foreman. Four instructors are in Santiago to teach tire building to the natives. They will return to Akron after the courses of instruction have been completed.

General Tire first entered Latin America as a tire manufacturer in Mexico, 14 years ago. In 1941 a plant was opened at Caracas, Venezuela.

New Tire Making Process Demonstrated

Scientists of The General Tire research staff recently explained a process of tire making which may open the way for the ultimate elimination of all rubber milling. More than 200 Congressmen, WPB and Rubber Reserve Co. officials, and newsmen witnessed the demonstration at the National Press Club, Washington, D. C., August 28, of a development which permits the mixing of a carbon black slurry and liquid rubber before coagulation. The carbon black is said to be perfectly distributed throughout the finished rubber. Tires made from the homogenized rubber are claimed to be superior to synthetic rubber tires now being made because of the perfect mix. Reported advantages of the new process include: 35% reduction in milling time; 35% reduction in manpower in milling operations; 20% reduction in power consumption; and lowered production costs. The greater use of synthetic rubber is anticipated even after natural rubber is again available, because the new process is expected to reduce the cost of synthetics.

The discovery was made by Gilbert Swart, research director, working in cooperation with Harold Pushee, chief chemist, and Robert Iredell, chief engineer. It is in commercial production on a large-scale basis in Baytown, Tex., where the company operates a government-owned synthetic rubber plant. Other companies have asked that the necessary equipment be installed in other government plants to speed production of military tires. Procedure in the past in the making of GR-S tires is followed except for the carbon black-slurry-liquid-rubber mixture.

William Spanton on August 1 retired from the American Hard Rubber Co., Akron, after 47 years of service. He started with the organization in 1897 while it was still the Goodrich Hard Rubber Co., which later consolidated with the Butler Hard Rubber Co., Butler, N. J., and India Rubber Comb Co., College Point, L. I., N. Y., to form the American Hard Rubber Co., with main offices in New York, N. Y. Since 1918, Mr. Spanton was employment and safety supervisor for the Akron plant. He was also quite active in the National Safety Council and Ohio Safety Congress.

New Tire Plant for Kansas

P. W. Litchfield, chairman of the board, Goodyear Tire & Rubber Co., Akron, announced on July 31 the awarding of the first of the construction contracts for a large new tire manufacturing plant at Topeka, Kans. This factory, a Defense Plant Corp. unit, will produce tires of large dimension for the mechanized equipment of our fighting forces and is expected to be completed and in operation about January 1. It is to be constructed saw-tooth style of brick and steel and will provide 200,000 square feet of factory floor space. The main plant is to be 900 feet long and 150 feet wide and will be partially two-story. In addition will be a power house, machine shop, and other auxiliary buildings. The plant will employ approximately 400 persons when full production schedules are attained.

W. D. La Due, of the Goodyear engineering staff, Akron, will be resident engineer supervising construction. R. F. Brown has been appointed works accountant, directly responsible to J. W. Roberts, chief works accountant, and E. J. MacDonald is chief clerk, responsible to Mr. Brown. J. Gordon Turnbull, of Cleveland, is consulting engineer of the job.

A subsidiary company, Goodyear Tire & Rubber Co. of Kansas, Inc., has been established to operate the new plant.

Personnel Assignments

D. W. Sanford has been named to the resident vice presidency of Goodyear Tire & Rubber Co. of California, in Los Angeles, Mr. Litchfield reported last month. Mr. Sanford, stationed at the Los Angeles plant as western division sales manager for the past two years, succeeds J. E. Mayl, who returned to Akron as head of the company's tire sales division. Mr. Sanford came with Goodyear in 1915 as a salesman in the Phoenix, Ariz., territory and has been manager of sales branch offices at Salt Lake City, El Paso, Portland, Oreg., Los Angeles, and San Francisco. Before transferring to the West Coast he had been southeastern and then northeastern division sales manager.

Assigned to Mr. Sanford's former post is E. L. Mefford, formerly vice president's assistant in charge of the company's Washington, D. C., offices. His successor is George M. Reveire, in charge of the Goodyear export office in Washington since July. Mr. Mefford, with the company's sales organization since 1917, served successively as district manager at Toledo, Columbus, Cleveland, and New York. He was assigned to Washington in April, 1943. Joining the company in 1919 as a salesman, Mr. Reveire also served Goodyear Export in Mexico City, Puerto Rico, and Spain and later was manager at Manila and in Argentina.

Appointment of H. L. Post, manager of Goodyear's shoe products division, as general manager of all operations of the Windsor Mfg. Co., Windsor, Vt., Goodyear's shoe products manufacturing unit, and the appointment of J. E. Cox, Windsor general superintendent, as assistant general manager of the company, were announced last month by Goodyear. Mr. Post started with Goodyear in 1913 as a mechanical goods sales representative, later becoming manager of shoe product sales. He left Goodyear in 1922, returning in 1936 as manager of shoe products sales. Mr. Cox joined the company in 1926 as a member of the flying squadron and later became supervisor and foreman in various mechanical goods production departments. He became general superintendent at Windsor in 1936 when the plant was purchased by Goodyear.

Walter P. Hallstein, Jr., who started with Goodyear in 1934 in its Flying Squadron, has been appointed assistant manager of the belt sales department. After six months on the Flying Squadron, Mr. Hallstein was transferred to the belt sales department and two years later to a mechanical goods sales territory in Pittsburgh, where he also served a brief time with Frick-Reid Supply Corp. Returning to Goodyear in 1938, Mr. Hallstein was sent to Philadelphia on mechanical goods sales, then to Baltimore. He was transferred back to Goodyear's belt sales department in Akron last summer.

Mission from Australia

Use of synthetic rubber in the manufacture of tires and other rubber products was studied last month at Goodyear by a mission of nine men representing the Australian government and the rubber industry of Australia. Goodyear was the first rubber company to be visited by the mission, which arrived in San Francisco on July 15. The men, representing all of the rubber companies of Australia, will make an extended study of the use of synthetic rubber during their three-month stay in the United States. The men also visited other rubber companies in the Akron area. Then they went to New York where the mission split up into smaller groups; the men will visit various types of manufacturers of rubber products.

The mission was arranged for the purpose of studying the processing of synthetic rubber and its uses in manufacturing rubber goods, looking toward extended use of synthetic rubber by the industry in Australia, according to members of the group. Its executive officer is W. E. Purnell, a representative of the Australian government. Others include: W. J. Condon, general superintendent, Goodyear Tire & Rubber Co. of Australia; F. Birdsall, factory manager, Olympic Rubber Co.; M. A. Belcher, also from Olympic; G. Foreman, South Australia Rubber Co.; G. Pattison, Hardie Rubber Co.; E. Charrat, Kimney-Charles Rubber Co.; D. Preistley, factory manager, Dunlop Tire & Rubber Co., and Major C. Harle, of the Australian Army, a former employe of Goodyear in Australia.

R. A. McCorkle, managing director of The Goodyear Tyre & Rubber Co., India, Ltd., and Clinton E. Croke, managing director of Cia. Goodyear Do Brasil, recently visited the parent organization in Akron. Both envisage tremendously expanded international trade based on the fundamental objective of increased standards of living for the people of all countries.

Fremont Rubber Co., Fremont, recently was formed by L. M. Robinson and R. P. Johnson to produce recapping material. The company, however, expects to go into the manufacture of inner tubes and mechanical goods in the postwar era. Plant manager is Paul Clark; production manager, M. Bliss.

The Jessop Advertising Co., Akron, is celebrating the tenth anniversary of the establishment of the business by Morris K. Jessop. The agency handles a number of important accounts including several in the rubber field, among them, Adamson Machine Co., C. P. Hall Co., and A. Schulman, Inc., all of Akron.

Financial World, 86 Trinity Place, New York 6, N. Y., in its survey of outstanding annual reports for 1943 in 40 leading industries picked that of the Seiberling Rubber Co., Akron, as best in the rubber industry. Second place went to Dayton Rubber Mfg. Co., Dayton, O.

The Timken Roller Bearing Co., Canton 6, has named R. G. Wingerter, for the past six years an industrial engineer, assistant chief engineer for the industrial division. Mr. Wingerter is an honor graduate of Wayne University and holds a Bachelor of Science degree in mechanical engineering. He is a member of the Society of Automotive Engineers, the Detroit Engineering Society, a board member of the Canton Junior Chamber of Commerce and the Jay-Teen Association.

The B. F. Goodrich Co., Akron, has named Edward A. Willson resident supervisor of the synthetic rubber laboratories operated by Goodrich at Kent State University, Kent, O. Mr. Willson came to the company's research laboratories in 1928 after his graduation as a chemical engineer from the University of Washington. Among his research assignments, from 1939 to 1941, was work at the company's laboratory established in the rubber plantation territory in Malaya, which he left before the Japanese seized the territory.

J. J. Pesaric, of the Goodrich international division, has returned to this company after acting for the Rubber Development Corp. in South America since March, 1943. He will be in the company's Washington office temporarily, according to S. W. Caywood, division general manager. Mr. Pesaric left the government department in June and returned to this country in July. His assignment as manager of the eastern division of the rubber section, R.D.C., took him into the Amazon basin in Peru where bases were established and natives recruited to obtain natural rubber for Allied uses. Mr. Pesaric joined Goodrich in 1935 and represented it in Peru, Ecuador, Bolivia, and the West Indies until 1942 when he returned to the company's international division office in New York. He joined Rubber Development in December, 1942.

Gordon Spillette has been named staff manager of Goodrich's factory service departments, according to Paul W. Watt, manager. Mr. Spillette succeeds Mr. Watt, who had held the post several years before his recent appointment as manager. A graduate of Miami University, with post graduate studies at the Massachusetts Institute of Technology, Mr. Spillette joined Goodrich in 1928 as a time study engineer. Previous to his present appointment he was manager of production and scheduling at the company's Mill 4.

Pharis Tire & Rubber Co., Newark, is constructing a new cement coating building, the latest step in its program to speed up tire production, according to President Furber Marshall. With the latest type of equipment used in the cement coating process, the cord that goes into tire production is now cemented on both sides in one operation. Heretofore the cementing process was done in different departments of the plant. With the entire process now confined to one building, greater efficiency in operation is obtained, together with the elimination of offensive fumes.

E. E. Laughlin, chief chemist, recently announced that definite postwar plans have been made to extend Pharis production into other fields in addition to continuation of tire and tube manufacturing. He also indicated that the war effort had necessitated the expansion of the Pharis company, and that rapid progress had been made in developing new products.

Hycar Chemical Co., 335 S. Main St., Akron, has appointed Frank E. Bell technical service engineer, according to Frank M. Andrews, general sales manager. Mr.

Frank E. Bell

Bell, who has had 13 years' experience in the rubber industry, comes to Hycar from the Barrett division of Allied Chemical & Dye Corp., where he was employed four years as technical service representative. He had also previously served with the Bolta Corp., Johnson Rubber Co., and Aetna Rubber Co. Mr. Bell was graduated from Case School of Applied Science in 1931 with a B.S. in chemistry and did special work at Massachusetts Institute of Technology. He is a member of the Division of Rubber Chemistry, A. C. S.

Akron city officials, as the result of a fire which destroyed the plant and stockpiles of a large scrap rubber concern in Akron recently, are strongly enforcing regulations covering the storage of scrap rubber. One of the rules is that it must be placed in separate stacks 50 feet wide, 100 feet long, and 15 feet high with 50-foot open aisles between stacks to hinder the spread of flames and provide space for firemen to work.

OBITUARY

Arthur E. Lloyd

ARTHUR E. LLOYD, veteran rubber thread manufacturer, died on August 3 in Barrington, R. I. Private funeral services were held at his home there on August 6, with interment in Swan Point Cemetery.

The deceased, who was born in Manchester, England, August, 1872, had for some years been a member of the firm of David Moseley & Sons, Ltd., Manchester. Mr. Lloyd came to this country in July, 1892, joined the Mechanical Fabric Co., Providence, R. I., manufacturer of rubber thread. He retired on September 1, 1938, after several years as president, secretary-treasurer, and general manager of the concern. In 1939, however, he became a director of Lloyd Mfg. Co., Inc.

He was a Mason and a Shriner and also belonged to the British Empire and Rhode Island Country clubs.

Survivors include the widow, a son, two grandchildren, and a brother.

Harry S. Wherrett

HARRY SCOTT WHERRETT, chairman of the board of Pittsburgh Plate Glass Co., Pittsburgh, Pa., died August 13 after a brief illness. He was born October 24, 1876, in Connorsville, Ind., and received his education in the public schools of Connorsville and the Kokomo, Ind., high school.

In 1891 he secured employment as office boy with the Diamond Plate Glass Co., which in 1895 became a part of Pittsburgh Plate. A year later Mr. Wherrett was transferred to the company's general office in Pittsburgh as a clerk in the sales department. He was promoted to the position of manager of plate glass sales in 1905, chairman of the commercial department in 1916, vice president in 1919, and president in 1928. In 1941 he was named vice chairman of the board, and in January, 1944, chairman.

The deceased was also a director of Bell Telephone Co. of Pennsylvania, Mellon National Bank; Westinghouse Electric & Mfg. Co., and of Westinghouse Electric International Co., vice president and director of Ditzler Color Co. and Southern Alkali Corp.; president, Pittsburgh Corning Corp.; and chairman of the board, Thresher Varnish Co. During the first World War, Mr. Wherrett served on the Optical Glass Committee and during the present one on the Allegheny County for Economic Development. Besides he was a director of the Pittsburgh Regional Planning Association, and a member of the Pittsburgh Convention & Tourist Bureau, Advisory Council of Pittsburgh Junior Achievement, the executive committee of Carnegie Hero Fund, Civic Club of Allegheny County, Pittsburgh Athletic Association, Duquesne Club of Pittsburgh, Longue Vue Country Club, Pittsburgh Chamber of Commerce, and Rolling Rock Club.

He is survived by his wife and a sister.

Arnold L. Scheuer

ARNOLD L. SCHEUER, 60, president of the Kelly-Springfield Tire Co., Cumberland, Md., from 1923 to 1925, died August 8 at his residence in New York, N. Y., after an illness of three months. He was born in Cincinnati, O., but at the age of 8 moved to New York with his parents.

In 1924 he was elected a director of the Rubber Association of America for a three-year term. Most of Mr. Scheuer's business activity, however, was in the banking field. For many years and until his retirement in 1934 he was president of A. L. Scheuer & Co., a private banking firm. He also belonged to the Lotos Club.

Funeral services were held in New York, August 9.

Mr. Scheuer leaves a wife, a brother, and two sons.

George A. Gahles

GEORGE A. GAHLES, assistant control manager of the Grasselli chemicals department, E. I. du Pont de Nemours & Co., Inc., died July 23, following a heart attack while vacationing at his home in Beaver Falls, Pa. Mr. Gahles had completed 45 years service with the du Pont and Grasselli companies. For 32 years he was in the accounting department of the Grasselli Cleveland, O., office. Since November, 1936 he held the position of assistant control manager and before that he had been assistant comptroller for Grasselli.

He is survived by his wife, his father, and several sisters and brothers.

William B. Miller

WILLIAM BALDWIN MILLER, founder of the Norwalk Tire & Rubber Co., Norwalk, Conn., died July 27 in a New York hospital following a short illness. He was born in Mount Vernon, N. Y., in 1868 and attended local schools. As a young man he entered the rubber industry in the employ of the Revere Rubber Co., Chelsea, Mass., becoming assistant general sales manager of the firm. This position he resigned to become secretary and general sales manager of the Diamond Rubber Co., Akron, O. Following the merger in 1912 of the Diamond Rubber and The B. F. Goodrich Tire & Rubber Co., he became second vice president and assistant sales manager of the Goodrich organization. In 1914 Mr. Miller founded the Norwalk Tire & Rubber Co. and served as president until 1929. He remained a director of the firm until his death.

The deceased was president and owner of the Greenwich Stud, a breeding farm near Lexington, Ky. Mr. Miller also held membership in the Union League, Greenwich Country, Belle Haven Beach, and Turf and Field clubs.

Funeral services were held July 29 at his late home in Greenwich, Conn. Interment was at Woodlawn Cemetery, New York, N. Y.

Surviving are his wife, three daughters, five grandchildren, a sister, and a brother.

William B. Marvin

WILLIAM B. MARVIN, secretary of Farrel-Birmingham Co., Inc., Ansonia, Conn., died August 13 after a short illness. He had been connected with the company for 39 years, having entered the employ of Birmingham Iron Foundry in 1905. He was treasurer of the latter firm at the time of the amalgamation of the Farrel and Birmingham companies in 1927. He became assistant secretary and director of the new company and was elected secretary in April, 1943.

Mr. Marvin was born in Wilton, Conn., May 17, 1880. He was a resident of Ansonia for many years, where he took an active interest in civic affairs and community organizations. He was a member of the First Congregational Church and of the Board of Trustees. He had previously served for several years on the Ansonia Board of Education and was a past presi-

William B. Marvin

dent of the Ansonia Rotary Club. He was a 32nd degree Mason, member of George Washington Lodge, A. F. and A. M., Mount Vernon Chapter R. A. M. of Ansonia, Union Council, R. and S. M., and New Haven Commandery, Knights Templar.

He is survived by his wife, a daughter, a son, two grandchildren, and a brother.

Funeral services were held at the late home in Ansonia on August 16.

Louis W. Dumont

LOUIS WAEHNER DUMONT, head of L. W. Dumont Co., crude rubber broker, 342 Madison Ave., N. Y., died of coronary thrombosis in a New York hospital August 11. He was born in Brooklyn, N. Y., July 26, 1886.

Mr. Dumont had been in the rubber business for the past 35 years. For a number of years he was associated with the United States Rubber Co. and in 1911 established a partnership with George Pell under the name of Pell & Dumont. Since 1920 Mr. Dumont was sole owner of L. W. Dumont Co.

He was a former member of the New York Rubber Exchange and at the time of his death held membership in the Commodity Exchange, Inc., Chicago Board of Trade, and the Rubber Trade Association of New York. Other organizations to which Mr. Dumont belonged included the 77th Division Association, American Legion, Military Order Loyal Legion, and the Oakland Golf Club.

Funeral services were held August 14 at Frank E. Campbell Funeral Home, New York. Private burial was in Woodlawn Cemetery, Bronx, N. Y.

Surviving the deceased is a widow.

S. M. Jett

SHELBY M. JETT, secretary, head of the legal department, and a director of The B. F. Goodrich Co., Akron, O., since 1927, died suddenly aboard a commercial transport plane just before arriving in Cleveland on August 9. He was born on a farm near Richmond, Ky., 55 years ago.

After graduating from Hampden-Sydney College in 1911, he attended the University of Virginia where he received his law degree in 1914. Thereafter he practiced law in small towns in the South until November, 1917, when he joined the Goodrich company. Six months later he moved into the newly formed legal department, of which he had been head since 1927.

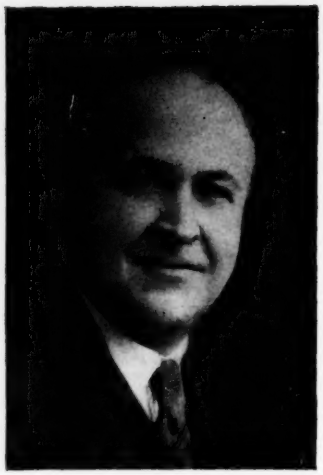
He is survived by his wife, two daughters, and one son.

Funeral services took place in Akron, August 12. Burial was in Richmond, Ky., the next day.

William A. Hart

WILLIAM ARTHUR HART, since 1928 secretary-treasurer of the Midwest Rubber Reclaiming Co., East St. Louis, Ill., which he was instrumental in organizing, died July 28 of a myocardial infraction. He was born December 11, 1880, in Hillgrove, O.

After graduation from high school in Union City, O., in 1898, he studied accounting and law and was a teacher (1898-1910) and superintendent (1910-1917) of various Ohio schools. In 1917, Mr. Hart became associated with the Goodyear Tire & Rubber Co., Akron, O., in its accounting department and from 1924 to 1928 was secretary-



William A. Hart

treasurer of the Akron Rubber Reclaiming Co., Akron.

The deceased was a member of the East St. Louis Chamber of Commerce and of the Edgemont Bible Church.

Funeral services and burial were in East St. Louis, July 31.

Survivors include a wife, three daughters, three sons, a sister, two brothers, and 13 grandchildren.

MIDWEST

Orlan McGrew Arnold, formerly a professor of chemistry at Rensselaer Polytechnic Institute, has been employed by Chrysler Corp.'s engineering division, Detroit, Mich., to set up a new special laboratory to be devoted to physical-chemistry research. Among other things, Doctor Arnold will devote himself to experiments with the molecular structure of oil toward improved lubrication; the molecular structure of paint, to try to make it stick better; the molecular structure of plastics, to make them stronger and more usable; and the refinement of insulation materials, textiles and others.

Minnesota Mining & Mfg. Co., St. Paul, Minn., has made H. C. Kenyon general sales manager of its subsidiary, Inland Rubber Corp., Chicago, Ill., where he will make his headquarters. Mr. Kenyon had joined Minnesota Mining as a sales representative in 1922 and for the past ten years was a division sales manager with headquarters in Philadelphia. Inland Rubber has an entirely independent sales organization for the development and expansion of sales of Inland products and other products that will subsequently be added to the present Inland line. At present Mr. Kenyon will direct an active sales campaign of Inland vulcanizing equipment and tire patching materials which the company has inaugurated to relieve the tire shortage problem.

The firm also announced that L. F. Weyand, since 1936 general sales manager of its adhesive and coatings division, has been made general manager, with headquarters, as heretofore, at the factory in Detroit, Mich.

Midwest Rubber Reclaiming Co., East St. Louis, Ill., on August 4 elected Howard Painter secretary-treasurer to succeed W. A. Hart, who died July 28. Mr. Painter was for many years manager of the Barberton, O., office and assistant treasurer of the firm. At the same time Wm. H. Baker was elected assistant secretary-treasurer. He also has been with the company several years.

H. H. Bashore has resigned his position with the United States Asbestos Division of Raybestos-Manhattan, Inc., Manheim, Pa., and is now employed by the Precision Scientific Co., Chicago, Ill., in the technical sales and service department, rubber and plastics division.

The Seamless Rubber Co., New Haven 3, Conn., has announced that Advertising Manager Arthur Scrivenor, Jr., after 11 years with the company has resigned to become vice president of The Merriam Mfg. Co., Durham, Conn. His successor is Edward P. Dawson. Miss Anne Reis is assistant advertising manager of Seamless Rubber.

Wire Compound Reenforcer

SILICAL, an aluminum silicate sometimes referred to as Newfoundland pyrophyllite, is now available as a reenforcing filler for use in wire insulation compounds. Free from mica, the new chemical offered by Herron Bros. & Meyer, 82 Beaver St., New York 5, N. Y., is said to have a low water absorption, low permanent set, and good electrical properties.

Rims Approved and Branded by The Tire & Rim Assn., Inc.

Rim Size	July 1944
15" & 16" D. C. Passenger	
16x4.00E	102,511
16x4.50E	4,489
16x5.00E	2,311
16x5.00F	11,633
15x5.50F	19,436
18x5.50F	471
16x6L	2,462
17" & Over Passenger	
18x2.15B	2,141
Flat Base Truck	
20x4.33R (6")	32,913
15x5.00S (7")	192
18x5.00S (7")	1,760
20x5.00S (7")	302,261
20x6.00T (8")	47,822
22x6.00T (8")	5,411
24x6.00T (8")	1,827
20x7.33V (9/10")	79,755
22x7.33V (9/10")	7,392
24x7.33V (9/10")	11,318
19x8.37V (11")	419
20x8.37V (11")	1,470
24x8.37V (11")	161
Semi D.C. Truck	
16x4.50E	2,734
16x5.50E	5,006
Tractor & Implement	
19x3.00D	16,209
24x6.00S	3,021
36x6.00S	1,171
W8-24	5,805
W9-28	3,692
W9-38	4,485
W10-36	1,135
DW10-38	7,787
DW12-30	3,683
DW12-34	1,662
Cast	
24x15.00	15
Total	694,560

ANOTHER *First* FOR MICRONEX

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APPLICATION

United States

2,352,637. **Composite Structure Having Successive Layers of a Rigid Base, Halogenated Rubber, a Vulcanized Polymerized Haloprene, and a Plasticized Polyvinyl Halide.** A. E. Juve, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,352,639. **Weather-Stripping with Filler of Resilient Material.** A. R. Kimish, Detroit, Mich.

2,352,680. **Apparatus for Storing and Projecting a Liquid, Including a Longitudinal Resilient Vessel.** L. R. Armitage, Enfield, England.

2,352,784. **Fluid Seal with Rubber Sealing Members.** H. D. Geyer, Dayton, O., assignor to General Motors Corp., Detroit, Mich.

2,352,828. **In an Engine Starter, an Endwise and Torsionally Resilient Driving Connection Having a Rubber Element.** J. W. Fitz Gerald, assignor to Briggs & Stratton Corp., both of Milwaukee, Wis.

2,352,866. **Brassiere of Elastic Material.** A. R. Stacy, Peoria, Ill.

2,352,872. **Reenforced, Inflatable Game Ball.** W. J. Voit, Los Angeles, assignee of L. C. Weimer, Southgate, both in Calif.

2,353,070. **Headphone.** R. S. Pitkin, Rochester, Minn.

2,353,245. **Bed Pan Cushion of Moisture-Proof Elastic Material.** L. J. Kiser, Indianapolis, Ind.

2,353,332. **Binding Tape of Non-Adhesive Material Having Adhesive Areas Spaced Apart along Its Length.** N. L. Hall, Long Beach, Calif.

2,353,403. **Rubber Cap.** T. J. Howland, Long Branch, N. J., assinor to United States Rubber Co., New York, N. Y.

2,353,462. **For Textile Drawing and Feeding Rolls, a Cover of a Copolymer of Butadiene and Acrylonitrile Compounded with Acetylene Black so as to Have Reduced Tendency to Carry a Charge of Statical Electricity.** H. H. Harkins, Providence, R. I., assignor to United States Rubber Co., New York, N. Y.

2,353,473. **In Making Safety Glass, the Use of a Rubber Bag in Which the Assembled Plates of Glass and Interposed Sheets of Plastic Materials Are Placed before Being Subjected to Heat and Pressure.** L. D. Keslar, Tarentum, assignor to Pittsburgh Plate Glass Co., Pittsburgh, Pa.

2,353,517. **Brush Cover Consisting of a Seamless Deposited Rubber Sheath.** A. N. Spanel, New York, N. Y., assignee of W. F. Dester, Dover, Del.

2,353,525. **Elastic Fabric Composed of a Layer of Fabric, and a Layer of Rubber Deposited from an Aqueous Rubber Dispersion; the Textile Fabric Has Yarns Buckled in at Least One Direction and Retained in This State by the Rubber When Unstretched.** M. C. Teague, Ridgewood, N. J., assignor to United States Rubber Co., New York, N. Y.

2,353,559. **In a Rivet Bucking Tool Having a Handle, a Head Secured on the Handle, and a Collar Slidably Mounted on the Head, a Hard Rubber Sleeve on the Collar.** J. L. Hajek, Jr., Cleveland, O.

2,353,567. **Waistband with Elastic Sections.** A. J. E. Key, Hempstead, N. Y.

2,353,717. **Transfer Adapted for Use in Coating a Surface with a Layer of Synthetic Resinous Material, Consisting of a Backing Sheet of Cellulosic Film to Which Is Temporarily Adhered a Coating of a Synthetic Resin.** C. S. Francis, Jr., Chestnut Hill, Pa., and W. Wade, Scarsdale, N. Y., assignors to Sylvania Industrial Corp., Fredericksburg, Va.

2,353,746. **Gasproof Container with an Interior Surface of Hydrochloride Rubber for Packaging Coffee.** G. A. Moore, New York, N. Y., assignors to Shellmar Products Co., Mount Vernon, O.

2,353,789. **In a Repellent Roll for an Adhesive Sheet Slitter, the Use of a Repellent Material Consisting of Incompletely Hydrolyzed Polyvinyl Acetate ("Solvar 405") and a Sodium Sulphonate of an Oleic Acid Ester of an Aliphatic Compound ("Igepon AP").** G. Schieman, Bronx, N. Y., assignor to International Plastic Corp., Morristown, N. J.

2,353,864. **Abrasive Article with a Rigid Reenforcing Backing Plate Composed of Compressed Layers of Felted Fiber Impregnated with Synthetic Resin.** C. E. Wooddell, assignor to Carborundum Co., both of Niagara Falls, N. Y.

2,353,935. **Tire Adapted to Be Mounted on a Conventional Steel Rim; the Tire Includes in Combination an Auxiliary Wooden Ring from the Circumference of Which Radiate Sets of Plates of Resilient Material Having a Sheet of Fabric between the Plates, Wedge-Shaped Spacer Members of Less Resilient Material between the Sets of Resilient Plates, and a Rod Seated in a Notch in the Side of the Plates and Adapted to Be Tightened or Loosened at Will.** G. D. Scott, San Francisco, Calif.

2,353,943 and 2,353,944. **Vibration Dampener Having a Pair of Coaxial Members Flexibly Connected by a Resilient Rubber Body.** H. A. Storch, Fairview Village, O., assignor to Harris Products Co., Cleveland, O.

2,353,977. **Annular Packing Device with a Backing Ring of Soft Rubber or the Like.** P. W. Thornhill, assignor to Automotive Products Co., Ltd., and Ribbesford Co., Ltd., all of Leamington, Spa, England.

2,353,988. **In a Fluid Sealing Device for Anti-Friction Bearings Having Two Relatively Rotating Members, a Resilient Rubber-Like Member between the First and Second Members.** D. E. Batesole, Glenbrook, and G. H. Kendall, Noroton Heights, assignors to Norma-Hoffmann Bearings Corp., Stamford, all in Conn.

2,354,019. **Spray Head.** O. W. Holden, Chicago, Ill.

2,354,044. **Spring Tire.** F. Nicoletti, Pittsburgh, Pa.

2,354,045. **Passageway Enclosure for Railway Cars, Provided with a Continuous Yieldable Tube Arranged to Fit against Door Frames.** K. F. Nystrom and L. Le Roy Lentz, both of Milwaukee, Wis.

2,354,060. **Moisture-Proof Paper or Cellulose Wrap Having an Undercoat of Latex.** C. M. Rhodes, St. Paul, and J. P. Sermattei, assignors to Rapinwax Paper Co., both of Minneapolis, both in Minn.

2,354,110. **Composite Material of Thermosetting Phenolaldehyde Resin Combined with Glass Fibers Coated with a Thermoplastic Reaction Product of Polyvinyl Acetate and an Aldehyde.** J. G. Ford, Sharon, and R. D. Spencer, Irwin, Pa., assignors to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

2,354,118. **Rubber Pencil Holder.** R. B. Hansen, Akron, O.

2,354,255. **Check Valve Including a Hollow Body, a Cap, and a Hollow, Thin-Walled Valve Ball, All of Plastic Material.** D. E. Gillum and D. H. Van Riper, both of Los Angeles, Calif.

2,354,341. **One-Piece Rubber Glazing Strip for Multiple Glass Sash.** C. M. Verhagen, Elkhart, Ind., assignor to Adlake Co., Chicago, Ill.

2,354,428. **Shock Absorber.** C. Saurer, assignor to Firestone Tire & Rubber Co., Akron.

2,354,435. **Fabric Woven from Strands or Strips of a Vinylidene Chloride Copolymer and a Plasticizer.** T. W. Stedman, New York, N. Y., assignor to Firestone Tire & Rubber Co., Akron, O.

2,354,436. **Seat Cushion and Cover of Polymers and Copolymers of Vinylidene Chloride and Another Vinyl Compound.** T. W. Stedman, New York, N. Y., assignor to Firestone Tire & Rubber Co., Akron, O.

2,354,438. **Fuel Tank Mounting.** H. W. Craig, signor to Firestone Tire & Rubber Co., Akron.

2,354,440. **Windshield Wiper.** R. W. Brown, assignor to Firestone Tire & Rubber Co., both of of Akron, O.

2,354,441. **Mooring Buoy Having a Hollow Buoyant Body of Resilient Impervious Material.** J. A. Diehl, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,443. **Molded Rubber Strip Applicable to Various Shaped Windows, as a Window Shield for Motor Vehicles.** O. E. Schirra, Garfield Heights, O.

2,354,445. **For Outboard Motor Mountings, Hollow Cylindrical Bushing of an Oil-Resistant Rubber-Like Material.** W. J. Grubbs, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,452. **Anesthetic Apparatus.** R. V. Foregger, Roslyn, N. Y.

2,354,538. **Elastic Packing in a Tube Coupling.** A. L. Parker, assignor to Parker Appliance Co., both of Cleveland, O.

2,354,564. **In a Die Structure, an Expansible Male Die of Solid Rubber with a Body Portion Enveloped in a Rubber-Like Sheath.** L. M. Wiley, assignor of one-third to J. T. Lett and one-third to R. R. Wiley, all of Marion, Ind.

2,354,609. **In Apparatus for Diffusing a First Fluid into a Second Fluid, a Porous Member, Means for Removably Securing This Member in Place, and a Resilient Joining Composition between Means and Member, Consisting of Reclaimed Rubber, Latex, and Synthetic Rubber.** C. A. Phipps, Hartsdale, N. Y.

2,354,631. **Fire Extinguisher.** H. V. Williamson, assignor by mesne assignments to Reconstruction Finance Corp., both of Chicago, Ill.

Dominion of Canada

421,197. **Synthetic Rubber Packing Member in an Improved Self-Packing Piston for Operation in a Fluid Pressure Cylinder.** L. Daly, Birmingham, Mich., U. S. A.

421,212. **Pneumatic Tire Including a Blowout Patch.** E. Scott, Stittsville, Ont.

421,227. **Coated Abrasive in Which the Bonding Medium Is of the Group of Synthetic Resins and Animal Glues.** Behr-Manning Corp., assignee of N. E. Ogglesby, both of Troy, N. Y., U. S. A.

421,228. **Container for Attachment to a Supporting Structure, Which Includes a Rigid Outer Wall with Opening at One End and an Inner Collapsible Chamber of Rubber.** Burndy Engineering Co., Inc., New York, assignee of M. Lee, Rye, both in N. Y., U. S. A.

421,293. **In an Electrical Convenience Outlet Having a Recessed Body, an Insert of Resilient Insulation Material.** John B. Pierce Foundation, New York, N. Y., assignee of J. F. O'Brien, Jersey City, N. J., both in the U. S. A.

421,294. **Surgical Glove.** Pioneer Rubber Co., assignee of K. L. Milligan, both of Willard, O. U. S. A.

421,334. **Reenforced Plastic Material.** W. Y. Jones, Kingston Hill, Surrey, England.

421,344. **Foundation Garment with Elastic Inserts.** F. E. Wrigley, Woodstock, Ill., U. S. A.

421,527. **In a Flow Control Device, a Body Having Inflow and Outflow Passages for Flow of Fluid, and Disposed within the Body, a Tube of Resilient Material.** Fluid Control Engineering Co., Oakland, assignee of D. H. Annin, Stratford, both in Calif., U. S. A.

421,528. **In a Flow Control Device, a Body Having Passages for Flow of Fluid, and Disposed within the Body, a Tube of Resilient Material.** Fluid Control Engineering Co., Oakland, assignee of A. U. Bryant, Berkeley, both in Calif., U. S. A.

United Kingdom

561,497. **Shock Absorbing Devices for Saddle or Handle Bar Support of a Cycle or Motorcycle.** E. Garnett.

561,611. **Composite Heel Pads.** Sussex Rubber Co., Ltd., and S. Bailey.

561,620. **Collapsible Tubes.** V. T. Ohrstrom.

561,819. **Flexible Containers for Transporting Gas.** Allen Fabric Gas Container Co., Ltd., and E. Allen.

561,925. **Shock Absorbers.** Ribbesford Co., Ltd., and P. W. Thornhill.

561,973. **Corset.** J. J. Kispert.

561,991. **Containers of Elastoplastic Film.** Wingfoot Corp.

PROCESS

United States

2,352,740. **Impregnating Bamboo with Synthetic Resin.** H. D. Shannon, Westfield, assignor to Bakelite Corp., New York, both in N. Y.

2,353,194. **Rubber-Covered Platen Rolls.** J. Q. Sherman, assignee of A. W. Metzner, both of Dayton, O.; K. M. and W. C. Sherman and W. B. Turner, executors of J. Q. Sherman, deceased.

2,353,402. **Impervious Bags of Flexible Material Having at Least Its Interior Surface Thermoplastic.** A. B. Haslacher, New York, N. Y.

2,353,457. **Producing a Synthetic Pearl Resin, without the Addition of Pearl Powders.** G. A. Goessling, Richmond Heights, Mo.

2,353,460. **Obtaining Rubber from Cryptostegia.** J. W. Haefele, Ridgewood, N. J., assignor to United States Rubber Co., New York, N. Y.

2,353,482. **Obtaining Rubber from Cryptostegia.** J. McGavack, Leonia, N. J., assignor to United States Rubber Co., New York, N. Y.

2,353,960. **Sewing a Waterproof-Thermoplastic Resin Member with Thermoplastic Thread.** E. J. King, New York, N. Y.

2,353,996. **Molding a Composition of a Thermosetting Binder and Vegetable Fiber Filler.** B. A. Cooke and L. W. Gane, assignors to Columbian Rope Co., all of Auburn, N. Y.

2,354,017. **Balls with Fluid Centers.** E. Hazell, North Kingstown, R. I., assignor to United States Rubber Co., New York, N. Y.

2,354,062. **Belt of Desired Trapezoidal Cross-Sectional Shape.** N. J. Ritzert, assignor to Dayton Rubber Mfg. Co., both of Dayton, O.

2,354,424. **Pneumatic Tire Direct from Latex.** C. K. Novotny and J. T. Cox, Jr., assignors to Firestone Tire & Rubber Co., all of Akron, O.

2,354,430. **Treating Porous Cellular Rubber Articles to Strengthen Their Surface.** H. W. Greenup, Barrington, and L. A. Wohler, Bristol Ferry, both in R. I., assignors to Firestone Tire & Rubber Co., Akron, O.

2,354,433. **Cellular Rubber Articles.** M. Carter, Yardley, Pa., assignor to Firestone Tire & Rubber Co., Akron, O.

2,354,442. **Inner Tubes for Pneumatic Tires.** R. F. Wilson and W. L. Klingman, assignors to Firestone Tire & Rubber Co., all of Akron, O.

2,354,446. **Molding and Vulcanizing Hollow Articles.** R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,449. **Elastic Novelty Yarn.** S. W. Alderfer, assignor to Firestone Tire & Rubber Co., both of Akron, O.

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This river oil-barge is a long way from the front lines, but it's doing a lot to help speed final victory. The Perbunan coupling hose is working to win just as hard as if it were part of a battleship or a tank.

It is made of synthetic rubber, and doing its job better than the natural product. Perbunan resists oil, heat, cold and time, and what it has demonstrated under wartime conditions is a bright forecast of its peacetime future.

Write us for information concerning Perbunan. Write, too, if your own technicians are confronted with a problem in the compounding of synthetic rubber. Scientists who developed Perbunan in the Esso Laboratories of the Standard Oil Development Company, and who control its manufacture from crude oil to finished rubber in the Baton Rouge Plant, are at your service.

THE SYNTHETIC RUBBER THAT RESISTS OIL, COLD, HEAT AND TIME

PERBUNAN
REG. U. S. PAT. OFF.

Write STANCO DISTRIBUTORS, INC., 26 Broadway, New York 4, N. Y.
Warehouse stocks in New Jersey, California and Louisiana

2,354,590. **Containers of Layers of Plasticized and Unplasticized Rubber Hydrochloride Sheet.** P. M. Gilfillan and I. Gurwick, assignors to Shellmar Products Co., all of Mount Vernon, O.

United Kingdom

561,544. **Corrugated Tubes.** United States Rubber Co.

561,623. **Sheets or Ribbons of Organic Plastic Materials.** L. Mellersh-Jackson, (Plax Corp.)

561,625. **Shaping Laminated Sheet Material.** S. C. Smith.

561,909. **Vulcanization of Tires.** Wingfoot Corp.

561,917. **Belting.** Dunlop Rubber Co., Ltd., and F. W. Warren.

CHEMICAL

United States

2,352,641. **Preparing a Beta-Alkoxy Monocarboxylic Acid by Reacting a Lactone of a Beta-Hydroxy Monocarboxylic Acid, Having at Least One Hydrogen Atom on the Alpha Carbon Atom, with a Monohydric Alcohol.** F. E. Küng, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,352,671. **Formal of Ethylene Cyanohydrin.** J. F. Walker, Lewiston, N. Y., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,352,705. **Composite Structure Consisting of Successive Layers of a Rigid Base, Halogenated Rubber, a Vulcanized Copolymer of Butadiene, and an Unsaturated Nitrile Having the Structural Formula** $CH_2{=}C(R){-}CN$ **Where R Is of the Class of Hydrogen and Alkyl Groups, and a Plasticized Polyvinyl Halide in Direct Contact with the Copolymer, All Bonded into an Integral Whole by Vulcanizing the Copolymer Layer after Assembling the Composite.** B. S. Garvey and D. E. Henderson, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

2,352,725. **Shaped Body of a Synthetic Linear Polyamide, Having a Pearlescent Effect Due to the Presence of Minute Elongated Voids.** W. H. Markwood, Jr., assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,352,865. **For Coating the Inside of a Container into Which Hot Fluid Bituminous Material Is to Be Poured and Allowed to Harden, a Composition Consisting of Glycerine, Alcohol, Acetone, Cellulose Acetone, and Toluene Sulphonamide-Formaldehyde Resin.** H. Smith, San Francisco, Calif.

2,352,950. **Antioxidant Which Is a Sulphonyl Amino Phenol in Which the Sulphonyl Group Is Attached to the Phenol Group through the Amino Group.** C. W. Gates, Naugatuck, Conn., assignor to United States Rubber Co., New York, N. Y.

2,352,974. **Polymeric Chemical Compound Including Monovalent Saturated Aliphatic and Divalent Aryl Radicals Linked to Silicon Atoms, Each of a Plurality of the Divalent Aryl Radicals Being Linked to Two Different Silicon Atoms.** E. G. Rochow, West Albany, N. Y., assignor to General Electric Co., a corporation of N. Y.

2,352,979. **Benzene-Soluble Copolymer of Butadiene with at Least One of a Group Consisting of Cyclopentadiene and Methyl Cyclopentadiene; the Copolymer Molecule Is Substantially Free from Other Than Diolefin Components.** F. J. Soday, Upper Darby, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,352,980. **Benzene-Soluble Copolymer of Isoprene with at Least One of a Group of Cyclopentadiene and Methyl Cyclopentadiene; the Copolymer Molecule Is Substantially Free from Other Than Diolefin Components.** F. J. Soday, Upper Darby, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,352,981. **Benzene-Soluble Copolymer of Piperylene with at Least One of a Group Consisting of Cyclopentadiene and Methyl Cyclopentadiene; the Copolymer Molecule Is Substantially Free from Other Than Diolefin Components.** F. J. Soday, Upper Darby, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,353,010. **A 1,4-Diamino-2-Nitroanthraquinone Which Carries in the Benzene Ring of the Anthraquinone Molecule Remote from That Which Carries the Amino Groups, a Substituent of the Group of Nitro, Hydroxy, Methoxy, and Halogen.** E. C. Buxbaum, Media, Pa., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,353,040. **Treating Styrene-Containing Petroleum Oils with Aqueous Picric Acid, Segregating Styrene Picrate, and Recovering the Styrene therefrom.** M. C. K. Jones and A. A. Wells, Roselle Park, N. J., assignor by mesne assignments to Jasco, Inc., a corporation of La.

2,353,091. **Preparing Primary Aliphatic Amines by Reacting Diethyl Ether with Hydrogen Cyanide in the Presence of a Dehydrating Catalyst.** O. C. Slotterbeck, Rahway, and A. R. Kittleson, Westfield, both in N. J., assignors to Standard Oil Development Co., a corporation of Del.

2,353,198. **Coating for Can Covers, Consisting of a Resinous Copolymer of at Least One Cyclic Conjugated Diene of the Group of Cyclopentadiene and Alkyl Cyclopentadiene with at Least One Aliphatic Conjugated Diolefin Having Less Than 6 and Core Than 3 Carbon Atoms per Molecule.** F. J. Soday, Swarthmore, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,353,223. **Purifying "Styrene Still Bottoms" Resulting from the Distillation of Styrene Synthetically Produced by Dehydrogenation of Ethyl-Benzene, by Reacting the "Still Bottoms" with an Alkali Sulphide to Convert Its Initial Content of Sulphur and Sulphur Compounds into Polysulphides and Separating the Polysulphides from the Purified "Still Bottoms" by Water Washing.** F. W. Corkery, Crafton, and S. G. Burroughs, Pittsburgh, assignors to Pennsylvania Industrial Chemical Corp., Clairton, all in Pa.

2,353,228. **Resinous Molding Composition Consisting of Polystyrene Containing a Small Amount of Polyalkylene Oxide.** F. W. Ducca, Butler, N. J., assignor to Bakelite Corp., New York, N. Y.

2,353,282. **Preparing a Substitution Product of Phenol by Reaction with an Olefinic Compound in the Presence of a Catalyst Composition of an Oxy Compound of Boron and a Compound of the Formula ROOC—COOR', Where R and R' Each Represent a Member of the Group of Hydrogen, Alkyl Radicals, Alkenyl Radicals, and Aryl Radicals.** V. H. Turkington, Mountain Lakes, L. R. Whiting, Woodbridge, and L. P. Rankin, Caldwell, all in N. J., assignors to Bakelite Corp., a corporation of N. J.

2,353,500. **Process for Recovering Butane and Dibutyl Sulphate from an Acid Mixture of Butane, Dibutyl Sulphate, Butyl Acid Sulphate, and Butene Polymers, in Which a Dibutyl Sulphate Containing Hydrocarbon Layer Is Separated from a Butyl Acid-Sulphate-Containing Layer.** F. M. Pyzel, Piedmont, assignor to Shell Development Co., San Francisco, both in Calif.

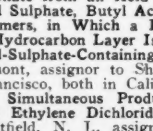
2,353,563. **Simultaneous Production of Ethyl Chloride and Ethylene Dichloride.** C. E. Hemminger, Westfield, N. J., assignor to Standard Oil Development Co., a corporation of Del.

2,353,591. **Vulcanizing Rubber in the Presence of the Condensation Product of an Aldehyde and a Terpenyl Arylamine Produced by the Reaction of a Terpene with an Amine Selected from the Group Consisting of Primary and Secondary Arylamines.** W. Scott, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

2,353,592. **Vulcanizing Rubber in the presence of the Condensation Product of a Ketone and a Terpenyl Arylamine Produced by the Reaction of a Terpene with an Amine of the Group of Primary and Secondary Arylamines.** W. Scott, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.

2,353,593. **A Compound of the Group of the 2-(Arylsulphonylamide-Methylene-Thio)-Thiazoles and the 2-(Arylsulphonylamide-Methylene-Thio)-Thiazolines.** W. Scott, Akron, O., assignor of Wingfoot Corp., Wilmington, Del.

2,353,687. **Cyanoethylated Dialkyl Acetaldehyde Having the Formula**



Where R and R' Are Each Alkyl Groups. H. A. Bruson and T. W. Riener, assignors to Resinous Products & Chemical Co., all of Philadelphia, Pa.

2,353,723. **Crack Sealer Composition Consisting of an Aqueous Emulsion of Bitumen Mixed with Ground Particles of Vulcanized Rubber, Bentonite, and Mineral Fiber.** E. O. Groskopf, Rutherford, N. J., assignor to Patent & Licensing Corp., New York, N. Y.

2,353,877. **Microporous Rubber.** R. G. Chollar, assignor to National Cash Register Co., both of Dayton, O.

2,353,910. **Coating Composition Consisting of a Resin Resulting from the Polymerization of a Vinyl Ether of an Alcohol Having 10 to 35 Carbon Atoms, an Alkyd Resin Which Has Been Modified with an Oxidizable Unsaturated Fatty Acid and a Volatile Organic Solvent for the Modified Alkyd Resin.** W. P. Lawler, G. J. Hable, and J. V. Steinle, assignors to S. C. Johnson & Son, Inc., all of Racine, Wis.

2,353,918. **Titanium Dioxide.** R. H. Monk, Montreal, P. Q., Canada, assignor to American Zinc, Lead & Smelting Co., St. Louis, Mo.

2,353,997. **Improved Process of Making Thiourea by Reacting Calcium Cyanamid with Hydrogen Sulphide.** R. H. Cooper, Nitro, W. Va., assignor to Monsanto Chemical Co., St. Louis, Mo.

2,354,011. **Bonding Rubber to Metal.** M. E. Gross, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,354,074. **Impregnating Hitherto Unimpregnated Articles Having Interstices, by First Boiling the Unimpregnated Articles in Benzol and Then Boiling Them in a Solution of Polystyrol Dissolved in Toluol-Xylol; the Solution Has a Higher Boiling Point Than Benzol.** J. G. Tandberg, Stockholm, Sweden, assignor to Electrolux Corp., Dover, Del.

2,354,090. **Wood Product Consisting of Dense, Compressed Permanently Water-Resistant Phenol-Formaldehyde Resin-Treated Face Plies Having a Distribution of Resin throughout the Cell-Wall Structure.** A. J. Stamm and R. M. Seborg, both of Madison, Wis., assignors to C. R. Wickard, as Secretary of Agriculture of the United States of America.

2,354,172. **In a Process of Removing Dissolved Salts from Water with the Aid of Cation Exchange Material and an Anion Exchange Resin, Improvements in Regeneration of the Spent Anion Exchange Resin.** R. J. Myers, Rydal, and D. S. Herr, assignors to Resinous Products & Chemical Co., both of Philadelphia, both in Pa.

2,354,210. **Polymerizing a Mass Containing an Acrylic Compound in the Presence of an N-chlorinated Hydantoin.** R. A. Jacobson, Landenburg, Pa., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,354,261. **Continuous Process of Polymerizing Olefins.** C. E. Hemminger, Westfield, N. J., assignor by mesne assignments to Standard Catalytic Co., a corporation of Del.

2,354,426. **Composite Article of Cellulosic Fabric and a Vulcanized Rubber.** R. C. Briant, Pittsburgh, Pa., assignor to Firestone Tire & Rubber Co., Akron, O.

2,354,427. **Treating with a Substance of the Group of Hypohalous Acids and Alkali Metal and Alkaline Earth Metal Salts thereof, a Mixture of 2-Mercaptobenzothiazole and Ethylene Diamine in an Aqueous Medium Including an Alkali.** E. L. Carr, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,479. **Molding Composition Consisting of Ground and Treated Leather Scrap Combined with a Phenolic-Formaldehyde Resin Syrup.** F. Rosenthal, assignor to University of Tennessee Research Corp., both of Knoxville, Tenn.

2,354,504. **Composition Consisting of an Aminoplast Modified with a Nitrogenous Compound of the Class of (1) Aryl Compounds Having Attached to the Aryl Nucleus at Least One Sulphonamide Radical and at Least One Ureido Radical, and (2) Aldehyde-Reaction Products of the Aryl Compounds of (1).** G. F. D'Alelio, Pittsfield, Mass., assignor to General Electric Co., a corporation of N. Y.

2,354,512. **Methyl Ethyl Ketone.** H. de V. Finch, Berkeley, and K. E. Marple, both of Oakland, assignors to Shell Development Co., San Francisco, both in Calif.

2,354,531. **Concentrating Latex and Similar Materials by Creaming with an Agent of the Group of Alkali Soluble Acid Cellulose Acetate Dicarboxylates and Their Water Soluble Salts.** G. Mack, Jackson Heights, N. Y., assignor to Advance Solvents & Chemical Corp., a corporation of N. Y.

2,354,572. **Producing a Surface Covering Composition by Heating in the Presence of Oxygen a Siccative Binder Containing an Oxygen-Convertible Alkyd Resin, Adding Filler, Sheeting the Resulting Mixture, and Polymerizing the Sheeted Mixture to Effect Final Hardening and Cure.** T. F. Bradley, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,354,574. **Glassine Paper Rendered Moisture-Proof with a Coating Composed of a Copolymer of Vinyl Chloride and Diethyl Chloromaleate, Polymerized Terpene, Hydrogenated Methyl Abietate, Paraffin, and Dibutyl Sebacate.** C. M. Carson, Cuyahoga Falls, O., assignor to Wingfoot Corp., Akron, O.

28,354,584. **Reactive Magnesium Oxide.** F. Elkington, Sheffield, and H. H. Chesny, Worksop, both in England.

2,354,632. **Producing Aromatic Ethers of 1,3-Butadiene-o1-2 by Reacting Monovinyl Acetylene on a Phenol at a Temperature of about 0°C. in the Presence of Mercuric Oxide as a Catalyst.** A. Wolfram, Frankfurt a.M., and H. Jahn, Beuthen, both in Germany; vested in the Alien Property Custodian.

Dominion of Canada

421,185. **Cyclohexane-Type Compound from Wood Products and Other Lignified Plant Tissue in Which Lignin Is Present.** H. Hibbert, J. L. McCarthy, and H. P. Godard, all of Montreal, P. Q.

421,234. **Interpolymerizing in Aqueous Dispersion Methyl Methacrylate and 2-Ethyl-Hexyl Methacrylate to Obtain Coatings for Textiles.** Canadian Industries, Ltd., Montreal, P. Q., assignee of A. Renfrew, Eaglescliffe, and W. E. F. Gates, Billingham, both in Durham, England.

421,236. **Flexible, Non-Tacky Plasticized Polyvinyl Butyral Film.** Canadian Industries, Ltd., Montreal, P. Q., assignee of A. Hershberger, Buffalo, N. Y., U. S. A.

421,238. **Copolymer of a Polymerizable Vinyl and Vinylidene Compound and an Organic Isocyanate Having the —NCO Group Attached to a Carbon in Turn Attached to a Second Carbon by Means of an Aliphatic Ethylenic Double Bond; the Remaining Valences of Carbons not Satisfied by Hydrogen Are Satisfied by Monovalent Organic Radicals Free from the Groups Reactive**

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with the Isocyanate Group. Canadian Industries, Ltd., Montreal, P. Q., assignee of D. D. Corman, Wilmington, Del., U. S. A.

421,242. **Continuous Method for Permanently Uniting Film of Heat-Sensitive Thermoplastic Vinyl Resin Material with the Aid of a Volatile Organic Softening Agent, Heat, and Pressure.** Canadian National Carbon Co., Ltd., Toronto, Ont., assignee of L. C. Hosfield, Parma, O., U. S. A.

421,260. **Rubber Articles from Aqueous Dispersions.** Dewey & Almy Chemical Co. of Canada, Ltd., Vila La Salle, P. Q., assignee of S. B. Neiley, Winchester, and E. E. Habib, Arlington, both in Mass., U. S. A.

421,266. **Volatile, Solvent-Free Moisture-Proofing Coating Composition.** E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., assignee of J. A. Mitchell, Kenmore, N. Y., both in the U. S. A.

421,297. **Manufacture of Cyclic Condensation Products by Condensing Compounds Which Contain a System of Conjugated Multiple Carbon Linkages with a Member of the Group of 1:2-Diacyl-Ethylene and 1:2-Diacyl-Acetylene Derivatives.** Society of Chemical Industry in Basle, Basel, assignee of M. W. Goldberg, Zurich, both in Switzerland.

421,346. **Refining a Dicarbozylic Acid Anhydride.** Allied Chemical & Dye Corp., assignee of the Barrett Co., both of New York, N. Y., assignee of W. C. Cooper, Jr., Jenkintown, Pa., both in the U. S. A.

421,348. **Molding Composition Consisting of Asbestos Threads Impregnated with an Amino Plastic Resin Syrup Which Will Polymerize under Alkaline Conditions.** American Cyanamid Co., New York, assignee of K. E. Ripper, Scarsdale, both in N. Y., U. S. A.

421,388. **Aryl-Amino Alkenyl Monohydric Phenol of the Benzene Series.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of P. T. Paul, Naugatuck, Conn., U. S. A.

421,420. **Improved Composition Storage Battery Separator of Porous Rubber, in Which a Small Amount of an Active Organic Ligneous Compound is Mixed with the Primary Constituents of the Separator.** National Lead Co., New York, N. Y., assignee of B. H. Schubert, Weehawken, N. J., both in the U. S. A.

421,480. **Manufacture of a Compound Fabric by Treating a Fabric or Paper Base with an Irreversible Water-Insoluble, but Water-Absorbent Inorganic Gel, then with a Solution of a Resinous Material of the Group of Thermoplastic Synthetic Resins, Chlorinated Natural Rubber, and Chlorinated Synthetic Rubber.** H. Meyer, Twickenham, England.

421,507. **Resinous Composition, the Reaction Product of Ingredients Including at Least One Aldehyde and at Least One Organic Compound of the Group of Aceto-Acetanilide and Halogenated Aceto-Acetanilides.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of G. F. D'Alelio, Pittsfield, Mass., U. S. A.

421,508. **Reaction Product of Ingredients Including an Aldehyde and Di-(Acetoacetyl) Ethylene Diamine.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of G. F. D'Alelio, Pittsfield, Mass., U. S. A.

421,523. **Soap Containing Mercapto Pyrimidine Compound.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of W. P. ter Horst, Pompton Plains, N. J., U. S. A.

421,591. **Composition Containing a Film-Forming Thermoplastic Substance Which Is Plasticized with the Aid of an N-Hydroxyalkyl N-Aryl Aryl Sulphonamide.** H. Dreyfus, assignee of W. H. Moss, both of London, England.

United Kingdom

561,337. **Stabilization of Nitrocellulose Photographic Film Base.** Kodak, Ltd.

561,344. **Synthetic Linear Polyamide Filaments.** E. I. du Pont de Nemours & Co., Inc.

561,351. **Impregnation of Fibrous Sheets as Cloth and Paper with Phenolic Resins.** Dux Chemical Solutions Co., Ltd., C. A. Redfarn, and F. W. E. Erwood.

561,403. **Acrolein Oxime and Acrylonitrile.** Distillers Co., Ltd., K. H. W. Tuerck, and H. J. Lichtenstein.

561,433. **Bubble-Free Shaped Synthetic Resin Masses.** E. I. du Pont de Nemours & Co., Inc., R. E. Leary, and B. M. Marks.

561,491. **Treating Latex or Adhesive Purposes.** B. B. Chemical Co., Ltd., L. E. Puddefoot, and A. Pilgrim.

561,514. **Electrically Insulating Coating Composition.** Pirelli-General Cable Works, Ltd., and H. Barron.

561,526. **Coloring Plastic Dental Materials.** H. M. Abraham.

561,584. **Reclaiming Waste Elastic Polychloroprenes.** United States Rubber Co.

561,645. **Gel-Forming Polymerization Products.** Standard Oil Development Co.

561,701 and 561,702. **Polyamide Compositions.** E. I. du Pont de Nemours & Co., Inc.

561,735. **Synthetic Rubber.** Wingfoot Corp.

561,768. **Plastic Polymeric Derivatives of Chloroprene.** United States Rubber Co.

561,800. **Lacquers.** Carbide & Carbon Chemicals Corp.

561,838. **Tetraethylthiuram Monosulphide Preparation.** B. Collie, E. Kay, J. L. Moilliet, and Imperial Chemical Industries, Ltd.

561,839. **Treatment of Synthetic Rubber.** India Rubber, Gutta Percha & Telegraph Works Co., Ltd., and R. J. Tudor.

561,849. **Aryl Mercuric Amides.** E. I. du Pont de Nemours & Co., Inc., and M. S. Kharasch.

561,896. **Anion Active Resinous Compounds.** American Cyanamid Co.

561,969. **Esters of Acrylic and Methacrylic Acids.** E. I. du Pont de Nemours & Co., Inc., and L. Jilk.

561,992. **Resinous Condensation Products.** British Thomson Houston Co., Ltd.

561,995. **Rubber Hydrochloride Film.** Wingfoot Corp.

561,999. **Preservation of Rubber and Other Oxidizable Organic Compounds.** B. F. Goodrich Co.

562,009. **Tetraethylthiuram Monosulphide Preparation.** E. Kay and Imperial Chemical Industries, Ltd.

562,089. **Esterification Products of Ethers of Aminotriazineformaldehyde Condensation Products.** Society of Chemical Industry in Basle.

562,091. **Synthetic Resinous Compositions.** E. I. du Pont de Nemours & Co., Inc.

562,092. **Interpolymers of Maleic Anhydride.** E. I. du Pont de Nemours & Co., Inc.

MACHINERY

United States

2,353,256. **Machine for Forming Beaded Edges on Rubber Goods.** F. J. Maywald, Jr., Rutherford, assignor to Allied Latex Corp., East Newark, both in N. J.

2,353,362. **Plastics Extruder.** W. C. Rudd, Yonkers, assignor to Induction Heating Corp., New York, both in N. Y.

2,353,432. **Apparatus to Twist Cord Elements.** C. J. Arrington, Detroit, Mich., assignor to United States Rubber Co., New York, N. Y.

2,353,570. **Tire Tread Contracting Device.** H. T. Kraft, assignor to General Tire & Rubber Co., both of Akron, O.

2,353,767. **Tire Building Drum.** E. F. Schnedarek, assignor by mesne assignments to Akron Standard Mold Co., both of Akron, O.

2,353,825. **Apparatus for Molding Thermoplastic Materials.** V. E. Hofmann, Toledo, O., assignor to Owens-Illinois Glass Co., a corporation of O.

2,353,987. **Apparatus for Applying an Aqueous Dispersion of Rubber to a Moving Strand.** F. S. Bartlett, Bristol, R. I., assignor to United States Rubber Co., New York, N. Y.

2,354,029. **Rotary Molding Press for Thermoplastic Materials.** A. W. Kingston, Denham, England.

2,354,120. **Apparatus for Assembling Adherent Unvulcanized Sheet Material.** U. C. Haren, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,354,243. **Apparatus to Orient the Surface Molecules of Plastic Materials.** R. P. Blake, Cambridge, Mass., assignor to Polaroid Corp., Dover, Del.

2,354,363. **Means for Heating Thermoplastic Materials for Molding.** A. A. Barry, Toronto, Ont., Canada.

2,354,432. **Apparatus to Make Inner Tubes.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,434. **Tire Building Apparatus.** H. D. Stevens, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,447. **Platen Press.** R. W. Allen, assignor to Firestone Tire & Rubber Co., both of Akron, O.

Dominion of Canada

421,235. **Apparatus for the Continuous Production of Sheets and Films from Film-Forming Compositions Coagulable in a Liquid Coagulating Bath.** Canadian Industries Ltd., Montreal, P. Q., assignee of W. Bender, Buffalo, N. Y., U. S. A.

421,242. **Apparatus for Uniting Thermoplastic Sheet.** Canadian National Carbon Co., Ltd., Toronto, Ont., assignee of L. C. Hosfield, Parma, O., U. S. A.

421,292. **Machine to Cover Tennis Balls.** Pennsylvania Rubber Co., Jeannette, Pa., assignee of A. C. Bowers, Akron, O., U. S. A.

421,357. **Device for Severing Sheet or Web Material Composed at Least in Part of Thermoplastics.** Cameron Machine Co., New York, assignee of W. M. Stocker, Hollis, L. I., both in N. Y., U. S. A.

421,392 and 421,393. **Tire Shaping Apparatus.** Firestone Tire & Rubber Co., assignee of R. W. Allen, both of Akron O., U. S. A.

421,583. **Combination of Vulcanizer and Mold for Producing Goods from Latex Foam.** United States Rubber Co., New York, N. Y., assignee of E. A. Luxenberger, Mishawaka, Ind., both in the U. S. A.

UNCLASSIFIED

United States

2,352,642. **Check Valve Device.** J. D. Langdon, Downey, Calif.

2,352,971. **Hose Clamp.** C. W. Prochaska, Mt. Vernon, N. Y.

2,353,050. **Track Block.** C. W. Leguillon and A. S. Krotz, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

2,353,173. **Tool for Slitting Cable Insulations.** S. M. Martin, Baltimore, Md., assignor to Western Electric Co., Inc., New York, N. Y.

2,353,187. **Machine for Assembling a Tire Locking Ring to the Rim of a Wheel.** A. H. Rerick, South Bend, and E. R. Rausch, Bremen, assignors to Studebaker Corp., South Bend, Ind.

2,353,386. **Defense Munitions Consisting of Small Tire Puncturing Units.** C. D. Bourcier, Grafton, Mass.

2,353,428. **Tire Pressure Indicator.** C. C. Akin, assignor to J. D. Akin, Seminole, Okla.

2,353,575. **Wheel Structure.** G. A. Lyon, Allenhurst, N. J.

2,353,650. **Apparatus for Installing Elastic Covers on an Aircraft Surface.** R. S. Colley, Kent, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,353,732. **Connector for Insulated Wire.** C. C. Kingsley, East Orange, N. J., assignor to Bell Telephone Laboratories, Inc., New York, N. Y.

2,353,916. **Pneumatic Tire Armor.** J. Mickelson, Lincoln, Neb.

2,354,425. **Metallic Container.** M. O. Kuhn, Cuyahoga Falls, O., assignor to Firestone Tire & Rubber Co., Akron, O.

2,354,431. **Testing Apparatus.** G. P. Bosomworth, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,437. **Bead Lock.** J. E. Hale, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,439. **Disk Wheels.** W. S. Brink, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,354,444. **Wheel Construction.** W. E. Lyon, assignor to Firestone Tire & Rubber Co., born of Akron, O.

United Kingdom

561,374. **Flexible Vehicle Wheel.** A. C. J. F. De Angelis.

561,377. **Valves.** W. Ernst.

561,686. **Coupling Devices for Pipes and Tubes.** Automotive Products Co., Ltd., and W. H. J. Brock.

561,699. **Fire Hose Support.** F. W. Burt.

561,711. **Coupling Devices for Pipes and Tubes.** Automotive Products Co., Ltd., and W. H. J. Brock.

561,854. **Tire-Carrying Wheel Rims.** E. P. Newton, (Kelsey-Hayes Wheel Co.).

561,955. **Wheels.** T. Firth & John Brown, Ltd., and T. Beaumont.

562,106. **Detaping Devices for Cables, Etc.** Johnson & Phillips, Ltd., and W. J. Welsh.

TRADE MARKS

United States

407,879. **Compregnite.** Liquid phenol-formaldehyde resin solution. Borden Co., New York, N. Y.

407,882. **Poly-Tac.** Resin for use in a tackifier, plasticizer, replacer, and extender of crude, reclaimed, and synthetic rubber. Newport Industries, Inc., Pensacola, Fla.

407,908. **Kavtex.** Composition soling material. Goodyear Tire & Rubber Co., Akron, O.

407,924. **Neopat.** Synthetic resin sheeting. H. Loewenstein, New York, N. Y.

407,977. **Tryle Walk.** Footwear. R. A. Burke, Oakland, Calif.

407,984. **An-Fe-Co.** Hose couplings and nozzles. Anderson Fire-Fighting Equipment Co., Inc., New York, N. Y.

407,987. **"Raytronic."** Resin bonded wood aircraft parts. Steinway & Sons, New York, N. Y.

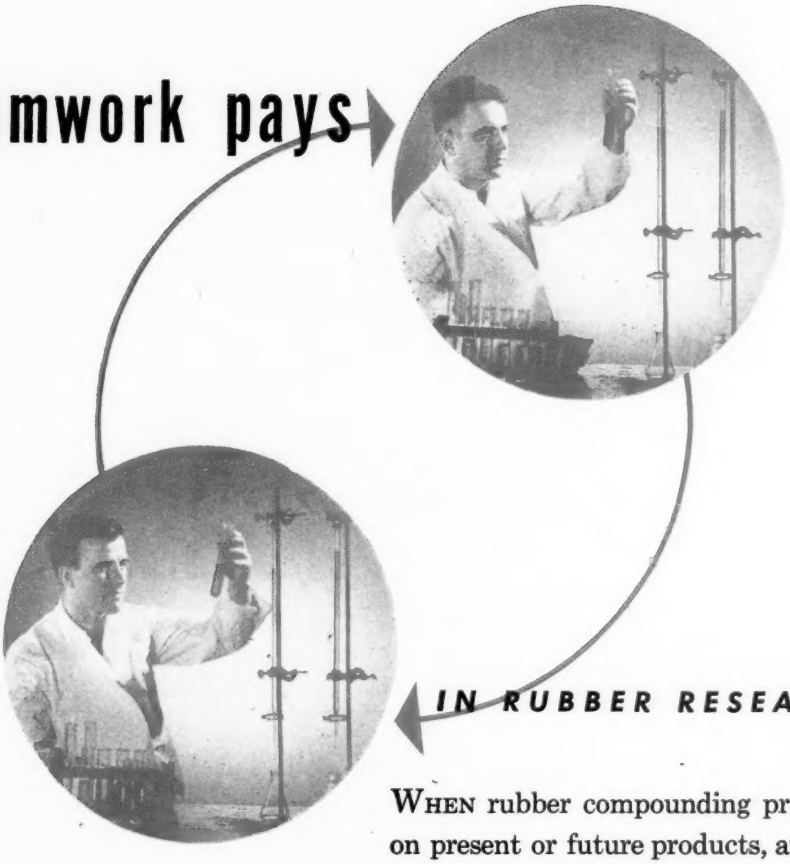
407,988. **Johnny Zero.** Footwear. Kays-Newport, Inc., Providence, R. I.

408,178. Representation of a shield containing the word: **"Philblack"** underscored thrice. Carbon compounding material. Phillips Petroleum Co., Bartlesville, Okla.

408,179. Representation of a shield containing the word: **"Philbon"** underscored thrice. Carbon black used as a filler. Phillips Petroleum Co., Bartlesville, Okla.

408,182. **Sherolite.** Chemical composition for sealing or waterproofing cables, etc., and for articles of manufacture in the industrial arts generally. T. R. Shearer, Verona, N. J.

Teamwork pays



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Reanite

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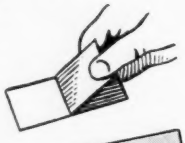
No brass plating



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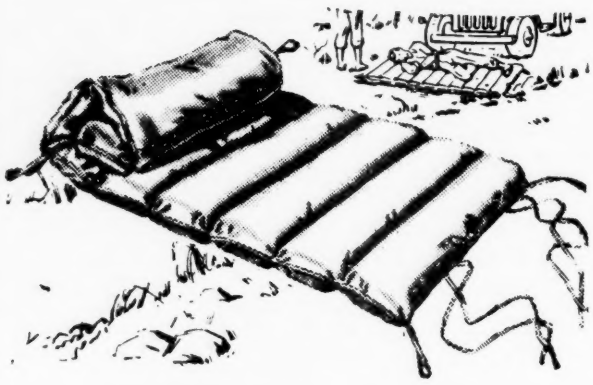

Latex Foam Mattress Rolls into Small Pack

Shredded Latex Foam Mattresses

"FLAKORUB" resilient field mattresses, filled with shredded crude latex foam rubber in which hundreds of tiny holes provide air circulation and coolness, have been found comfortable by men in the armed forces and are also available to sportsmen and other civilians. The mattresses are covered with a heavyweight poplin so treated that it is water repellent on the top side and waterproof on the under side. Weighing 10½ pounds, the mattresses are 66 inches long and 30 inches wide and can be rolled into a compact bundle 30 inches long with a nine-inch diameter. Water repellent pillows filled with the same material are nine by 18 inches and weigh one pound. Larger pillows, wedge cushions, dog cushions, and other cushioning devices are available in the "Flakorub" products which are vermin proof and do not need inflation. Allatex Bedding Co.

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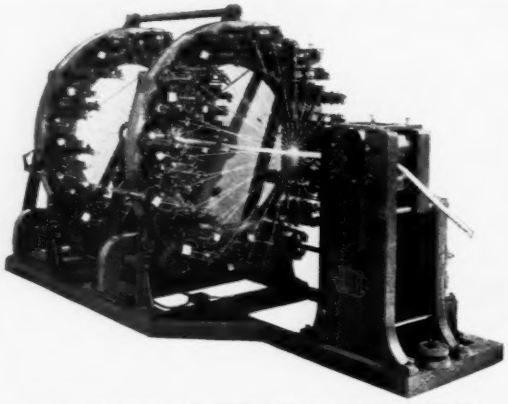

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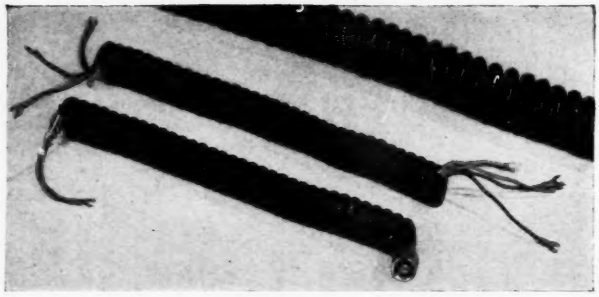

Retractible Rubber-Jacketed Electrical Cord

contracted length. Because it conserves space and adds to the flexibility of the apparatus, the extending and natural contracting feature is valuable in aviation communication and signaling equipment. Retractible electrical cords with different conductor combinations and in various diameters and lengths can also be had and are possibilities as standard equipment on many postwar home and industrial appliances. Both neoprene and GR-S have been found satisfactory for the outer covering of these cords. Cordage, Inc.

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Australia

Australia is likely to use synthetic rubber for manufacturing tires, says a report traced to official circles, and there is talk of sending experts to the United States to study the proper technical methods. Such a change in the use of raw material will naturally involve the adaptation of Australian machinery to the requirements of synthetic rubber; while skilled operators will have to be trained to work with it.

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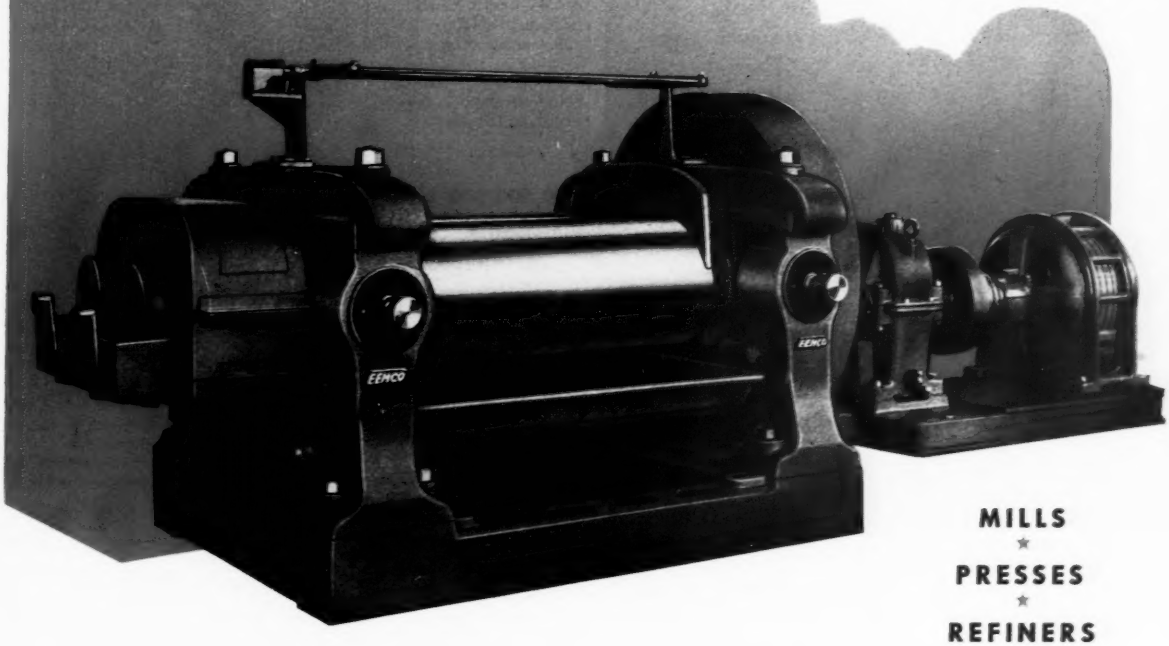

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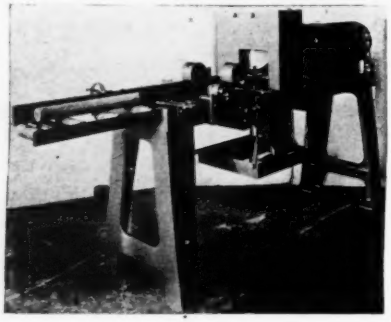

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EUROPE

GREAT BRITAIN

New Method of Reclaiming Synthetics

As soon as it became evident that synthetic rubber would find a regular place in the British rubber industry, Rubber Improvement Ltd., London, which has developed various well-known products for the rubber industry including "Rilata," set about finding a suitable method of reclaiming synthetic rubber. The firm is reported to have perfected an entirely new process by which a markedly superior reclaimed synthetic is being produced on a factory scale. Details of the process have not been revealed.

In view of present conditions the company is, for the time being at least, concentrating on special-purpose synthetics as neoprene and Perbunan.

£10,000,000 National Research Fund

Responding to the government's statements in a White Paper that export trade must be expanded to insure full employment, scientists and members of Parliament on the Parliamentary and Scientific Committee have outlined a scheme for a £10,000,000 national research fund for developing industries in Britain. The scheme is now under consideration by the committee and, if finally approved, will be submitted to the government. It is recognized and emphasized that if Britain is to lead the world's trade revival, she must begin work immediately along scientific lines.

The committee is also considering the introduction of a bill promoting the development of large-scale research schemes in any industry if 70% of the firms in the industry are agreeable.

It is further learned that highly important developments are expected to result from the linking up of the committee with the Parliaments of the Empire.

Rubber and the Postwar Trade

The Federation of British Rubber & Allied Manufacturers' Associations has presented to the Board of Trade a preliminary memorandum in which the Federation states that in its opinion the availability of raw material, especially natural rubber, is a governing factor in the resumption of postwar trade; also that synthetic, no matter how freely available, cannot yet be regarded as a complete substitute for natural rubber in some important products. It should therefore be emphasized that the entire industry can neither provide maximum employment nor recover its prewar productivity unless and until an adequate volume of natural rubber is at its disposal. The Federation advocates stabilization of the price of rubber at a reasonable level for a specified postwar period and stresses the importance of the ability of other industries to supply component and auxiliary materials.

The Federation has decided to make its industrial research committee a permanent standing committee of the Federation with its own qualified secretariat. In this way it is hoped to strengthen the research side of the organization, for although it is not intended to take up actual research work the aim is to do everything possible, through the standing committee and in collaboration with existing organizations in this field, to stimulate industry's interest in research and to assist to the utmost the efforts of any more comprehensive organization to which the present widespread awareness of the importance of research may give birth. The industrial committee will encourage industries to devote a larger part of their resources to research, will provide money for post-graduate research, and will encourage the training of suitable staffs.

Companies are already making their preparations for postwar trade. Thus Dunlop Rubber Co., Ltd., with an eye to expanded business in rubber cushioning after the war, has created a new Dunlopillo promotion division with L. Harral, general sales manager.

The company is also developing a program for postwar education and training of its employes. In a preliminary outline just issued, it is pointed out that in the Dunlop organization, as in many others, the training required by many grades of employes both in the office and in the factory is of such a specialized kind that it cannot be obtained in any public educational or training institution. Therefore the company intends to provide a full series of training and refresher courses for all ranks, from the senior executives down. A seven weeks' course for production foremen has

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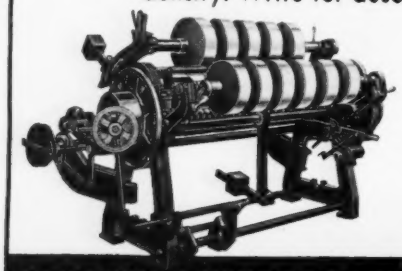

CAMERON MACHINE COMPANY 61 POPLAR ST., BROOKLYN 2, N. Y.
MIDWEST OFFICE: Harris Trust Building, 111 West Monroe Street, Chicago 3

already been started at Fort Dunlop, and there are also to be refresher courses lasting one week, for regional sales managers, district managers, and technical service representatives.

The company has also completed arrangements for the reabsorption and training of demobilized employes.

Callender's Cable & Construction Co. has set aside £175,000, or almost 40% of last year's profits, to guarantee the wages and salaries of returning service men. About 1,300 of the company's workers are involved.

Financial Reports

At the forty-fifth ordinary general meeting of Dunlop Rubber Co., Ltd., the chairman, Sir George Beharrell, in discussing the company's trade for 1943, stated that the system of control of market quotas instituted in 1942 remained in force, and exports were restricted to those territories allocated to Great Britain and to the volume allowed by the position of rubber supplies. It was to be hoped that these limited opportunities for maintaining export trade would not be further restricted. Despite existing conditions the company's profit for 1943 showed a substantial increase over that of the preceding year. Manufacturing units in India and South Africa continued in full production; turnover increased, and profits were very satisfactory. The Irish company had had to face serious difficulties of raw material supplies, but thanks to the aid of the Ministry of Supply and the Government of Eire, production could continue at Cork, and the dividends from the company could be maintained. In spite of labor shortage, the American company was able to report substantially increased sales, and it continued to show a profit. On the other hand, reduced rubber supplies caused a reduction in sales and profits of the Canadian company, as compared with results of 1942.

The parent company booked net profits at £2,765,797 for 1943, against £2,433,307 for 1942. The amount brought forward had been £627,586 so that the total available for appropriations was £3,393,383. The sum of £869,201 was set aside for excess profits tax, which brings the total provision made in the Dunlop group of companies for United Kingdom excess profits tax to December 31, 1943, to £7,440,000. Bearing in mind the many factors which may adversely affect world trade after the war and the possible damage to properties in Europe and the Far East, the policy of the directors of the Dunlop company has been to set aside available surplus profits in a special reserve to insure that the company enters the postwar era in the strongest position possible to withstand the shocks which are considered inevitable. At present this special reserve amounts to £3,750,000. The company paid preference dividends for 1943 amounting to £200,000 and also declared a dividend of 8% on the ordinary stock. A balance of £644,369 was carried forward.

North British Rubber, Ltd., reported net profits of £75,026 for 1943, against £70,000 in 1942. The company stated that stricter control of raw material and government orders affecting sales have made conditions more difficult than ever. However the company has been able to develop other lines which are giving a satisfactory return.

The Goodyear Tire & Rubber (Great Britain) Co., Ltd., made a profit of £145,055 in 1943, as compared with £148,008 for 1942. The sum of £294,190 had been brought forward (against £264,182 in the preceding year), and dividends of 17% were distributed on ordinary shares (against 12½%). The balance left to be carried forward was £285,245. The company further reports stock and work in progress representing a value of £1,041,339, against £866,234.

Footwear Notes

About 50,000 pairs of women's lightweight unvarnished boots of the Wellington type have been released at half coupon rate (three instead of six coupons will be required). These boots are intended for work on the land, and special permits must be obtained from County War Agricultural Executive Committees.

To save rubber in the manufacture of rubber boots, the Dunlop factory at Manchester has devised a rubber knee boot which has a wooden sole with rubber pads and metal protection that can be replaced when worn.

GERMANY

In an article originally in the German rubber journal combining the former *Gummi-Zeitung* and *Kautschuk*, which was translated by *India Rubber Journal*, Werner Esch discusses the available rubber content of reclaims. He makes the point that in the production of rubber vulcanizates and, to a greater

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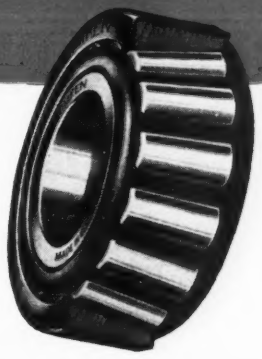

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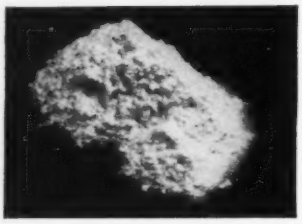

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extent, in reclaiming, part of the rubber substance is disintegrated by the curing and reclaiming treatments so that a fraction becomes soluble in alcoholic potash or acetone. This fraction retains a part of its rubber-like properties and can be further vulcanized, but not so successfully as new rubber. From this Esch concludes that the usual method of chemically evaluating reclaims by difference is misleading as it yields too small a value for "hydrocarbon" because of the soluble portion lost in the extracts.

To illustrate, Esch refers to a rubber shoe mix mentioned by Talalay in an article in Hauser's "Handbuch der Gesamten Kautschukuktechnologie." The mix, which has a specific gravity of 1.58, is made up as follows: rubber, 38.5%; extractable matter, (pine tar, pine resin, sulphur), 3.85%; litharge, 13.5%; chalk, 38.5%, and carbon black, 5.65%; in which, therefore, the ash yielding constituents amount to about 52%.

In practice, Esch continues, rubber shoe reclaims normally yield about 52% ash and contain up to 6% carbon black so that other combustible constituents represent about 42%. Allowing for the extractable ingredients (softeners, sulphur, etc.) the original mix from which such a reclaim is derived must have had a rubber content of about 38%. In the case of reclaim, the usual extraction with acetone and alcoholic potash actually yields more than the 3.85% mentioned by Talalay because the reclaiming treatment causes a fraction of the rubber to decompose and become soluble. Consequently if the actual higher extract plus carbon black, plus ash is deducted from 100% in the usual manner, a reclaim analysis will give about 33% as the rubber content. The difference between this and the 42% of combustible ingredients, about 9%, cannot represent pine tar, pine resin, and sulphur only, since nine parts on 33 corresponds to 28 parts on 100, an unreasonably large proportion. The argument is further supported by the specific gravity which is 1.58, the same as that of the Talalay mix. But the specific gravity of rubber is 0.93, of pine tar and pine resin, 1.08, and of sulphur 2.07; a rubber shoe containing only 33% rubber, as indicated by ordinary analysis, would necessarily have a higher specific gravity.

Similarly Esch analyzes other types of reclaim, including steam-process reclaims, showing that determination of extract, ash, carbon black, and rubber by difference always gives results too low for the rubber content, and he concludes that if the ash is determined exactly and the kind of reclaim is known, more accurate results are obtained by calculating the rubber content from the composition of the mix.

Germany has been supplying at least part of her needs for war material from allied aircraft shot down in German occupied territory, it is learned from a German source. Since January, 1944, it is said, 2,300 four-engined bombers have been shot down, and rubber and other valuable materials have been salvaged from them.

SWEDEN

Reports on the rubber situation in Sweden obtained from various sources seem to be somewhat conflicting, but all indicate that attempts are being made to relieve the acute shortage of natural rubber with the aid of Buna rubber imported from Germany and home-produced synthetic rubber. It is not clear exactly what amounts of rubber are being obtained rrom Germany—some reports state that the imports are insufficient, others, that they are increasing and apparently adequate; nor is it certain what types of synthetic rubber are actually being produced in Sweden, or how much.

At a meeting of automobile owners held recently in Stockholm, one of the speakers indicated that the rubber situation had improved and that Sweden might be able to keep up production with the aid of synthetic rubber. It was also revealed that Buna imports from Germany had increased and were currently much greater than in 1943; but it was added that deliveries were uncertain on account of the war situation.

According to an issue of the American Swedish News Exchange, the rubber situation has become so acute that the Riksdag recently earmarked about $5,000,000 for the immediate construction of a synthetic rubber factory. What type of rubber is to be produced here was not specified.

Another report by the same News Exchange will have it that neoprene-type synthetic rubber is being produced on an industrial scale at the Ljungaverk plant in the province of Medelpad. The process, it appears, is one developed by Professor The Svedberg, Nobel Prize Winner.

Earlier announcements indicated that "Thiokol"-type rubber is already being produced in Sweden.

It may also be added that Ljungaverk also has chemical plants of

the Stockholm Superfosfat Fabriks A/B, including an experimental plant recently established for the manufacture of plastics.

In connection with tire manufacture, it is understood that because of the prevailing shortage of cotton canvas, experiments are being conducted with canvas of artificial silk.

EUROPEAN NOTES

New uses are constantly being found for the growing number of synthetic resins and plastics. In Prague have been displayed samples of footwear made of Plexiglas, a product of polymethacrylic acid ester originally developed by Röhm & Haas, Darmstadt, Germany. It is claimed that this footwear is more durable than that made of leather, can be produced in all colors, is easily cleaned with a damp cloth when soiled, and is also comfortable. It is reportedly planned to manufacture Plexiglas shoes on a commercial scale after the war.

In Italy, Italian soldiers are performing useful and efficient work as salvagers of signal cable for the Allies, the Fifth Army relates. As this army moves forward in Italy, hundreds of miles of signal cable are left behind. Since 80% of the cable is rubber, salvage squads have been formed under the supervision of British soldiers. These squads collect cable from roads and bring it back to Squad Headquarters where it is sorted, tested, soldered together in long lengths, and wound on drums before being reissued.

Spain has issued a government order suspending the manufacture of tires for automobiles.

Produits Chimiques & Metallurgiques Alais, Froges et Camargues, known as Pechiney, is an important French chemical concern of Lyons. European reports state that the firm is to acquire a controlling interest in various smaller enterprises including coal and lignite companies as Société des Mines de Charbon des Alpes and Société de Lignites de Barjai et du Gard. The concern, which has increased its capital of 803,800,000 francs to 837,000,000 and may further raise it to 1,255,500,000 francs, has shown great interest in the production of oil from coal. According to a Swiss paper, it is also producing a synthetic rubber known as Thiogomme.

AFRICA

The present great need of natural rubber for a time turned attention once more to the possibilities of *Euphorbia tirucalli*

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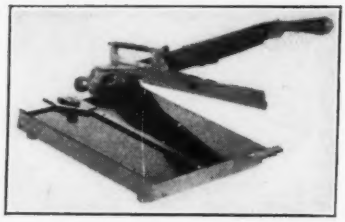

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as a South African source of rubber. Latest news, however, indicate that experiments with this rubber have now been abandoned and that efforts will now be concentrated on producing rubber from *Landolphia*. The snag, as far as the *Euphorbia* rubber is concerned, seems to have been the high cost of extracting rubber. To offset this, it had been attempted to find an industrial use for the high percentage of resin that the latex contains, but evidently results have not been sufficiently encouraging.

Investigations conducted in this direction by the Imperial Institute in 1911 and 1913 had indicated that the dry content of the *Euphorbia* latex included 14.3 to 15.7% of rubber and 75.8 to 62.1% of resin, but tests carried out at the time showed that the resin was not suitable for varnishes prepared by the usual methods.

In 1943 renewed experimentation was undertaken with samples of resin sent from South Africa, and detailed tests were made both at the Institute and at the Paint Research Station, Teddington, when it developed that the resin had the serious defect of crystallizing out of solution. Further work led to the development of processes by which this defect was largely eliminated, and laboratory tests yielded a short oil stoving varnish which could have industrial use in the manufacture of waterproof fabrics, leather finishes, and finishes for the interior of shells. But it was added that tests on a semi-commercial scale would have to prove the real value of the product. From the fact that *Euphorbia* latex extraction is to be abandoned, it may be concluded that results did not justify further effort along the above lines.

Revised orders regulating both the trade in automobile tires and their use have been issued for Belgian Congo and Ruanda-Urundi. New tires are to be reserved for vehicles of firms contributing to the war effort, and the rubber of old worn tires unfit for further service is to be reclaimed. No imported tires may be distributed in the provinces named without the sanction of the president of the Office of Supplies.

A new 35-mile road just completed will make accessible new rubber-producing areas in the Gold Coast, it is learned. Several species of wild rubber are said to be native to this territory, and it is expected that exploitation of the districts will yield several hundred tons of rubber annually.

Discussions between a British Ministry of Supply expert and the Ethiopian Government is understood to have led to the formation of a non-profit-making organization which will tap, collect and export new rubber and also train the necessary labor.

FAR EAST

CEYLON

Measures to Increase Production of Rubber

Reports of the considerable progress made in America in the production of synthetic rubber have created the erroneous impression here that there is no great need of natural rubber at present, a misunderstanding which threatens to hamper the United Nations in their attempt to obtain the largest possible amount of natural rubber. The Combined Raw Materials Board of the United Nations has therefore telegraphed a corrective statement to the Governor of Ceylon explaining that the manufacure of certain important goods like heavy-duty tires, surgical goods, and a variety of essential war items still require varying percentages of natural rubber and that the amount of rubber which must be released in 1944 for essential needs will dangerously deplete natural reserves and leave the position of the United Nations at the end of the year below the minimum hitherto regarded as necessary. The situation in 1945 will be further aggravated unless more natural rubber than is now in sight is forthcoming, for in spite of the great success of synthetic rubber and the greatest economy in the use of natural rubber, consumption of the latter at present is proceeding at a considerably greater rate than are arrivals of the commodity.

The problem of stimulating outputs is therefore once more in the minds of responsible persons. A measure recently taken to help attain the desired end is coming in for much criticism as being undignified and insulting to planters. This is a competition for maximum rubber outputs, with cash prizes awarded quarterly to the winners. The competition is open to all superintendents of estates, which for the purposes of the competition are divided into

three classes: those of 301 acres and over; those 101 to 300 acres in extent; and those of 25 to 100 acres. The prizes for the winners in each of the three classes are, Rs. 1000, Rs. 500, and Rs. 250, respectively.

A new plan, especially designed to replace the compensation scheme which, he said, was acceptable to most companies registered in Great Britain, but not to those registered in Ceylon, has been offered by Col. K. D. H. Gwynn, retiring chairman of the Southern Province Planters' Association at its recent meeting. This plan calls for the allotment of a definite quota to every single rubber bearing area, whether of 1,000 acres or only a single tree, with rising bonuses for anything produced over the quota. For any rubber produced less than the quota, a fine of so many cents a pound is to be imposed. If the production exceeds the quota by 20% or so a bonus of over 50 cents a pound is to be paid.

Promising Results with Budgrafting

While Ceylon has been rather backward in the matter of budgrafting, as compared with Malaya and Netherlands India, and for some time relied chiefly on imported clones, it has, nevertheless, succeeded in developing a number of local clones. Most of these have not been very successful, but several seem to be promising, among them Millakande 3/2 (MK 3/2), Wagga 6278, Hillcroft 28 (HC 28) and Hillcroft 55 (HC 55). At the age of 12 years, a group of nine MK 3/2 trees planted at Nivitigalakele yielded 17.4 pounds per tree per annum; six Wagga 6278 trees yielded 21.2 pounds per tree per annum, and 19 HC 28 trees, 14.5 pounds per tree per annum. HC 55 trees planted at Stenness also gave good yields; a group of seven trees of this clone yielded 20.7 pounds per tree per annum in the fifteenth year; the following year, however, there was a decline to 17.4 pounds per tree per annum, which may be merely a temporary set-back as frequently occurs among even the best of clones.

In 1943 it was discovered that trees of MK 3/2 seem very susceptible to a form of bark rot which has been diagnosed as canker of the renewing bark caused by *Phythophthora*. Of 63 trees in tapping, 37 were affected, and in many cases the rapid spread of the disease severely damaged tapping panels. Not only this clone, but 60 out of the 150 clones at Nivitigalakele also suffered more or less, but in none of these cases does the disease appear to have been so widespread as in clone MK 3/2.

Commercial Yields of Imported Clones

A questionnaire sent out in 1942 to estate owners asking for yield records from budded rubber in commercial tapping made available about 78 records from areas in tapping more than one year and at least one acre in extent. The data referred to imported clones, many of which were planted around 1930-31; consequently the clones most used were Tj. 1, Tj. 16, BD 10, and BD 5, AV 49, and AV 50. The last three clones are no longer considered first class—AV 49 and 50 because their yields, while sometimes quite satisfactory, are generally comparatively low, and HD 5 because, in spite of its good yields, it is susceptible to bark bursts and to bark rot.

The varying yields obtained from the different clones on a commercial scale once more underline the important part that location plays in outputs. Of the clones mentioned, Tj. 1 is generally conceded to be the best; yet on three out of eight estates 11-year-old trees of this clone gave less than BD 10 trees of the same age; the comparative yields of the two clones on the three estates were 713 against 955 pounds per acre; 1,084 against 1,141 pounds per acre; and 987 against 1,494 pounds per acre, respectively. On one estate yields for all clones were disappointingly low—499 pounds per acre for Tj. 1 and 218 pounds for Tj. 16, in their tenth year are unusually poor results. The figures showed a marked improvement in the following year so that possibly we have here merely a case of slow development.

Yields from Clonal Seedlings

Only one yield record of clonal seedlings exploited on a commercial scale is available—that for an area of 24 acres on an estate in the Kalutara district. Here seeds from the Tjikadoe seed garden in Java were planted in 1928, and the yields per acre were 1,112 pounds in 1940; 1,189 pounds in 1941, and 1,217 pounds the next year.

Prang Besar clonal seedlings planted experimentally by the Research Scheme at Nivitigalakele yielded on an average of 7.6 pounds per tree per annum when seven years old. In the same experimental garden three Prang Besar clones, ranging in age from 10½ to 12 years, yielded 7.0, 12.1 and 8.5 pounds per tree per annum, respectively. Under favorable conditions, therefore, Prang Besar seedlings in Ceylon may equal, if not excel the Prang Besar clones.

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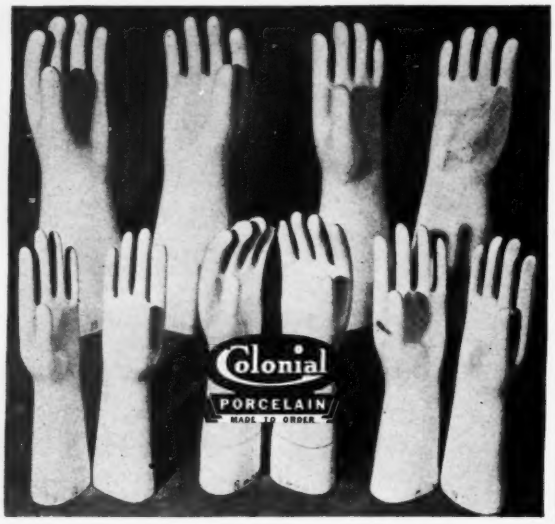

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FAR EASTERN NOTES

Javanese plantations including the rubber plantations are to be reorganized, according to a Japanese source, and 22 Japanese firms have been appointed by their government to take over the plantations and increase production.

It is further announced that a new production method will be used in the rubber plantations in Sumatra, and a number of new varieties will be introduced. What is meant by these new varieties is not explained.

Changes are also planned for Malayan rubber lands, but while in the former Dutch territory the proposed activities suggest efforts at expansion, the reverse seems to be the case in Malaya. At all events, it is announced that the program there includes the conversion of 600,000 acres out of the total 3,000,000 acres under rubber, to rice fields; but only the old, wornout plantations are destined to be replaced.

From time to time news seeps through about men formerly well-known in Malayan rubber circles, but from whom nothing has been heard since the Japanese invasion. Recently it was learned that H. J. Page, G. Owen, and H. S. Blacklin, all members of the staff of the Rubber Research Institute of Malaya, are civilian internees.

Via Holland comes the news of Japanese experiments in the utilization of rubber in road-building in Java. Tar and timber mixed with rubber waste are said to be the materials used; and if the results are satisfactory, it is planned to resurface all Java roads with the same mixture.

A scheme for encouraging rubber production, somewhat along the quota lines outlined for Ceylon, has meanwhile actually been introduced in India. Under this plan, which is to operate from April 10, 1944, to June 30, 1945, a basic annual production figure is fixed and divided into appropriate quarterly quotas. Bonus payments will be in proportion to the amount by which outputs exceed the base. If there is a decrease below the base, there will be no bonus.

Recent Russian Literature

(*Continued from page 648*)

A brief evaluation of the cultivation of rubber-bearing plants in U.S.S.R. is given.

Guayule. S. M. Mashtakov, *Kauchuk i Rezina*, 9, 36-40 (1939). **N-19.**

Six species of guayule were investigated. The amounts of rubber, tar, and water soluble substances were determined in the bark and in the ligneous part of each. The rubber content in the bark runs from 2.87-9.92% and in the ligneous part, 0.05-2.45%. The tar content was 10.74-15.31% in the bark and 3.24-6.52% in the ligneous part. These values are on dry basis. The molecular weight of the rubber varies from species to species; the lowest is 22,000, and the highest 44,000. The relative viscosities were determined in an Ostwald viscometer on concentrations of 0.05, 0.125, 0.25, 0.5, and 1%. The acid number, ether number, saponification number, iodine number, and index of refraction were determined on the tars. The results are tabulated.

The Industrial Importance of Swallow-Wort. G. R. Stepanov, *Kauchuk i Rezina*, 9, 40-43 (1939). **N-20.**

Swallow-wort, a native plant of Canada, is well acclimatized in Russia, where it is grown in various regions. Granted proper seed selection, the plant may yield 6.5% of rubber and 7% of tar. In addition, the seeds contain 17% of valuable industrial oil. The stalks are suitable for paper making. Details of cultivation and analyses of various parts of the plant are given.

Hand Rails for Escalators. I. G. Romashkin, *Kauchuk i Rezina*, 9, 53-58 (1939). **SN-45.**

Technological processes involved in making rubber (SK) hand rails for escalators are described in detail.

(*To be continued*)

Editor's Book Table

BOOK REVIEWS

"The Chemical Front." William Haynes. Published by Alfred A. Knopf, Inc., 501 Madison Ave., New York 22, N. Y. 1943. Cloth, 8½ by 5½ inches, 224 pages. Index. Price $3.

Poison gas is a dramatic and terrible aspect of modern warfare on the chemical front, but its significance is minimized by the army of about 1,400 different chemicals which are vital, each in its own way, to victory on the battlefields. William Haynes, former editor of *Chemical Industries,* though revealing no military secrets, summarizes clearly and with unflagging interest the story of the raw materials and processes in the production of super-explosives, high-octane gas, synthetic rubber, smoke-screens, structural light metal alloys, plastics, and other chemicals of war.

The chapter "Chemistry in Politics" reviews the history of the rubber crisis.

"Rubber trees flourish no more luxuriantly in the United States than in Germany," Mr. Haynes points out, "but all the heroes of our voluminous detective fiction cannot now find the murderer of rubber preparedness."

Seven official bodies originally dealt with the synthetic rubber production problem, but not one of them "ever had authority to approve a plan, provide funds for its execution, and see it through to completion." Waste, confusion, indecision, technical disputes, and political squabbles resulted from this lack of final authority as well as costly changes in plans and priorities. Some examples are cited by the author. Much of what he writes may be true, but in spite of attempts at political interference, the record of the Office of the Rubber Director as given in the six Progress Reports, issued from 1942 to 1944, and actual production irrefutably measured in present synthetic output and its success in keeping "America on wheels" are generally considered in both technical and lay circles outstanding achievements. Mr. Haynes does go on to say that war needs were achieved, and synthetic rubber is here to stay.

"Our rubber problem is not going to be solved by the reopening of the Pacific," Mr. Haynes opines, and he holds in the nature of false hopes the millions of dollars spent in recent years to encourage South American rubber production.

"Hackh's Chemical Dictionary." Third Edition. Completely revised and edited by Julius Grant. Published by The Blakiston Co., 1012 Walnut St., Philadelphia 5, Pa. 1944. Cloth, 10 by 6¾ inches, 932 pages. Price $12.

Following the death of Ingo Hackh in 1938, the latest revision of his chemical dictionary was made by Julius Grant, a former collaborator. Concise definitions of more than 57,000 terms used in chemistry, physics, minerology, agriculture, engineering, biology, pharmacy, and medicine are presented. As in previous editions, an effort has been made to achieve a balance between American and British points of view. The omission of pronunciations is not felt by Mr. Grant to be a serious loss in view of space economies effected.

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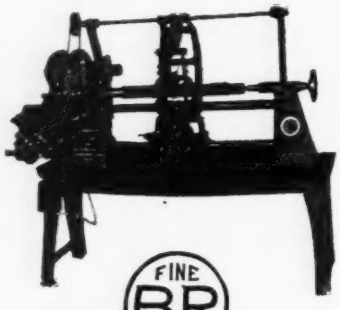

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However, though many chemists persist in a personal scheme of pronunciation, a standard authority is desirable. There are 217 tables, diagrams, and portraits.

"The Chemistry of Synthetic Substances." Emil Dreher. Published by the Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y. Cloth, 8½ by 5½ inches, 103 pages. Price $3.

Though not identified as such by the publisher, this volume is a translation from the German. It seeks to summate research in the chemistry of synthetic substances with regard to the processes which take place in their production. The determination of molecular weight of organic high polymers, the relations of synthetic high molecular compounds to drying oils, the principles of the processes of polymerization and polycondensation, the types of polymerization products, the influence of the constitution on the capacity for polymerization and the influence of substituents on the capacity for polymerization of low molecular compounds, and the recognition of solubility of high molecular film-forming substances are treated from the German point of view. References later than 1938 are not given, which suggests the lapse of several years between the appearance of the original and the translation. Only a few references to the important American literature are included. The organization of the material is not scholarly, and an inadequate translation and inexpert editing and typography are easily discernible throughout.

"Cellulose and Cellulose Derivatives." Edited by Emil Ott. Interscience Publishers, Inc., 215 Fourth Ave., New York, N. Y. 1943. Cloth, 6½ by 9¼ inches, 1176 pages. Price $15.

This book has been published as Volume V in a series of monographs on the chemistry, physics, and technology of high polymeric substances. Through the contributions of 35 cellulose chemists it offers a unified presentation of the vegetables sources, the properties as determined by research, and the industrial problems and their resolutions which have made available a large number of technical applications of cellulose and its derivatives. The basic concept, and perhaps the most important in the book because from it derives an explanation of many properties of the molecule, is the long-chain anhydroglucose macromolecular structure of cellulose.

No pertinent topic appears to have been omitted. The contents may be briefly grouped as follows: structure, chemistry and physical properties of cellulose and its derivatives; occurrence, isolation, and purification; fiber structure and its relation to chemical reactions and physical uses.

The industrial chemist will find the chapter, "Derivatives of Cellulose," of timely importance. War stringencies have placed a new emphasis on plastics as replacements for rubber and metals, and industry has made a large effort with notable achievements to fabricate the abundant supplies of cellulose into needed ethyl cellulose and other materials having useful properties. The descriptions of the cellulose derivatives and their technical applications not only foreshadow future developments, but offer challenging incentives to the alert technologist, for it is clear that cellulose and its derivatives, like other high polymers, can be modified within limits to produce highly desirable new industrial items.

Numerous tables and illustrations amplify the comprehensive, concisely edited text. Cross-references, footnotes, and bibliographies are generously provided, and there are ample subject and author indices.

"Chemical Machinery. An Elementary Treatise on Equipment for the Process Industries." Emil Raymond Riegel. Published by Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y. 1944. Cloth, 9¼ by 6 inches, 583 pages. Index. Price $5.

Apparatus and devices which serve a number of diverse chemical processes are given major attention in this volume; highly specialized equipment could not be generously included because of the space limitations necessitated by a single volume of moderate size. Therefore much of the equipment for producing synthetic rubber and its components has been omitted. The content is exact, and useful information and the treatment of the material are descriptive. The text is supplemented with drawings, photographs, charts, and tables.

Varying amounts of space and emphasis are allotted to mills and crushers, rubber-lined storage and process tanks, pumps, mixers, conveyer equipment including a traveling rubber tube conveyer, screening and grading equipment, separators, driers, high-pressure equipment, solvent recovery, instruments, and many other devices that have made possible the rapid advance of chemical industries.

"Hercules Nitrocellulose, Properties and Uses." Hercules Powder Co., Wilmington 99, Del. 56 pages. This basic technical book contains chapters on the history, types, manufacture, solubility, viscosity, and uses of nitrocellulose. The section on uses discusses its application in lacquers, adhesives, inks, plastics, and coated textiles.

NEW PUBLICATIONS

"P-33 and HMF Black in a GR-S Selenac Compound." Booklet No. 5. R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y. June 30, 1944. This laboratory report contains tables showing smoother and faster extrusion and reduced tensile and elongation in Selenac sulphurless compounds in which 30 parts of an HMF black were substituted for an equal amount of an MPC black. Elongation was improved by increasing the P-33 from 30 to 50 parts and reducing the HMF black to 10 parts. The smoothest and fastest extrusion resulted in a fourth compound in which the P-33 black was increased to 85 parts and the HMF to 15 parts.

"Methods for Determining the Effects of Sub-Zero Temperatures on Elastomers." BL-158. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. 8 pages. Apparatus and methods of test for determining relative flexibility, brittleness, and change in hardness of elastomers at sub-zero temperatures are described in this report for the purpose of assisting compounders in selecting the best compound from a group of stocks for resistance to subnormal cold according to the results obtained by the various tests evaluated. A diagram and a description of the du Pont cold box in which most of the tests were made are included.

"TP-90B in Neoprene GN Compounds." Technical Service Bulletin #24. Thiokol Corp., Trenton, N. J. 2 pages. The physical characteristics of TP-90B, a high molecular weight polyether plasticizer, and suggestions for its use in Neoprene GN compounds are given in this report. Five formulae using varying amounts of TP-90B and test data for the cured stocks indicate its effect in obtaining good low-temperature resistant stocks.

"Federal Specifications for Gaskets; Rubber (Natural or Synthetic), Molded, Sheet, and Strip." Federal Specification HH-G-156a, May 2, 1944. Superintendent of Documents, Government Printing Office, Washington, D. C. 6 pages. Price 5¢. This specification, which supersedes Fed. Spec. HH-G-156 and Emergency Alternate E-HH-G-156, defines the physical requirements and gives methods of sampling, inspection, and tests for gaskets and molded, sheet, and strip rubber for compounds utilizing polymerized chloroprene, a copolymer product of butadiene, and a copolymer product of isobutylene and isoprene.

"Continex SRF." Report 44-3. Witco Chemical Co., 295 Madison Ave., New York 17, N. Y. 20 pages. Data are presented in this report comparing Continex SRF with competitive SRF blacks at various loadings in natural rubber and GR-S. Standard test formulae were used. Tables of physical properties offer a comparison of Continex SRF and seven other standard blacks in GR-S and natural rubber. Results of tests on surface structure for Continex SRF and seven other furnace, channel, and thermal blacks are tabulated. Electron micrographs of three blacks show the particle size of Continex SRF the largest, which is said to account for easier processing, lower heat build-up, and lower tensile, tear, and modulus in both natural rubber and GR-S.

"Strains in an Inflated Rubber Sheet, and the Mechanism of Bursting." L. R. G. Treloar. Publication No. 46. The British Rubber Producers' Research Association, 19 Fenchurch St., London, E. C. 3, England. 12 pages. The published report of Dr. Treloar's research on stress-strain relation in a two-dimensional extension states that the two principal strains in a circular sheet of inflated rubber clamped at its circumference show relatively large variations over a spherical area with approximate uniform thickness. The author discusses the reasons for his findings. A relation was established between the number and the regularity of the radial tears and the hardness at the instant of breaking in experiments on the bursting of rubber sheets. Both natural and synthetic rubbers were used. The strain measurements suggest that the radial tears are not caused by the slight radial orientation of the molecules. The mechanism of bursting is further discussed by a comparison to glass fractures.

"A Report to Industry on Simplex Synthetic Rubber Insulations." Simplex Wire & Cable Co., 79 Sidney St., Cambridge 39, Mass. 12 pages. A paper, "Progress Report, Buna S (GR-S) Insulation", by E. W. Davis, chief electrical engineer of Simplex Wire, as presented before the transmission and distribution committee, Edison Electric Institute, Chicago, Ill., May 2, is included in this pamphlet. Comparative data for natural rubber and GR-S on dielectric strength, dielectric constant, power factor, ozone resistance, and water absorption establish the suitability of GR-S for insulations and sheaths and suggest some limitations of GR-S.

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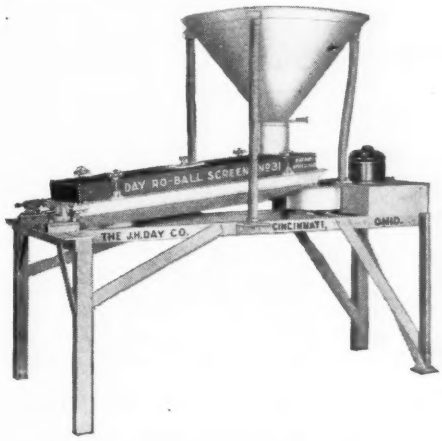

The Ro-Ball above is a No. 31, Hopper Feed, Closed Top Type which is used extensively for processing of natural or compounded rubber products, where sulphur, oxides, etc., are used, and dust tight construction is required.

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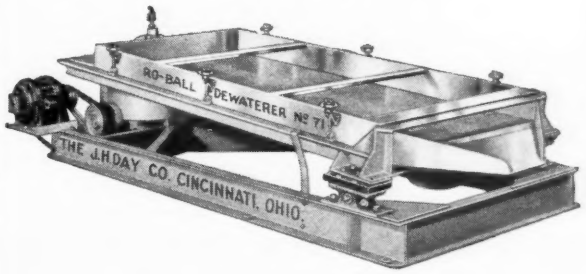

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"Symposium on the Applications of Synthetic Rubbers." Published by the American Society for Testing Materials, 260 S. Broad St., Philadelphia 2, Pa. 1944. 134 pages. Price, paper, $1.50; cloth, $1.75; to A.S.T.M. members, $1 and $1.25 respectively. The 13 papers and several discussions in this volume were presented March 2, 1944, at the spring meeting of the A.S.T.M., in Cincinnati, O. The data presented on the efficiency and serviceability of synthetic rubber covers tires and tubes, belting and hose, molded products, cellular rubbers, hard rubber products, footwear, adhesives, extruded products and wire and cable. There are also discussions of physical properties, physical testing, and specifications. This small reference volume serves a need in providing up-to-date information for users of synthetic rubbers, as contributed by leading authorities.

"Waxes for Today and Tomorrow." Distributing & Trading Co., 444 Madison Ave., New York 22, N. Y. 8 pages. This booklet discusses substitutes and replacements for imported waxes and gives specifications and prices for the firm's domestic mineral and vegetable waxes for rubber compounding and other applications.

"Agricultural Handbook." July, 1944, Edition. The Tire & Rim Association, Inc., 2001 First Central Tower, Akron 8, O. 38 pages. **"How to Prevent Roadside Flat Tires** through the Comparative Air Loss System." Office of Defense Transportation, Washington 25, D. C. 4 pages. **"American Hi-Torque Motor Pulleys."** Catalog HT-44. American Pulley Co., 4200 Wissahickon Ave., Philadelphia 29, Pa. 8 pages. **"Highway Planning."** Shell Oil Co., Inc., 50 W. 50th St., New York 20, N. Y. 8 pages. **"Let's Face the Facts about Accidents."** Norman Damon. Automotive Safety Foundation, Tower Bldg., Washington 5, D. C. 26 pages. **"A Brief Tariff History of the United States."** American Tariff League, 19 W. 44th St., New York 18, N. Y. 32 pages.

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SPAN
GRINDING MILL
For Producing
GROUND RUBBER SCRAP

Ground Rubber Scrap is being used to advantage in Molded Goods of all types.

SPAN GRINDING MILL (Type VIII), illustrated above, reduces all grades of vulcanized rubber scrap to fine powder form ready to be mixed with ordinary molding compounds.

Provided with an attached vibrating screen, it is a compact, self-contained unit producing a uniform material automatically and at low cost. Capacity 200 to 400 lbs. per hour. Power required, 25 H. P.

Type X (not illustrated), for larger production.

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155 JOHN STREET NEW YORK 7, N. Y.

Regular and Special Constructions of

COTTON FABRICS

Single Filling Double Filling and

ARMY
Ducks

HOSE and BELTING
Ducks

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320 BROADWAY
NEW YORK

Market Reviews

COTTON & FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	June 24	July 29	Aug. 5	Aug. 12	Aug. 19	Aug. 26
Sept. .	....	21.44	21.34	21.54	21.81	21.86
Oct. ..	21.05	21.24	21.14	21.34	21.61	21.65
Dec. ..	20.85	21.04	20.95	21.15	21.42	21.46
Jan. ..	20.78	20.92	20.83	21.07	21.35	21.33
Mar. .	20.65	20.87	20.75	20.95	21.22	21.25
July ..	....	20.50	20.36	20.54	20.71	20.70

COTTON futures prices in August fell below the record high levels of July, because of new formal estimates of a yield of 11,022,000 bales in contrast to earlier forecasts of a 10,0000,000-bale crop, favorable cotton weather in the South, rapid war developments, and uncertainty over the Washington situation in the price of raw cotton. The $^{15}/_{16}$-inch spot middling price of 21.89¢ a pound on August 1 dropped to 21.79¢ on August 7, climbed to 22.23¢ on August 22, strengthened by Congressional proposals to raise the cotton loan rate, and closed at 22.25¢ a pound August 30.

The Census Bureau reported that the United States cotton supply in the cotton year ending July 31 totaled 21,726,605 bales. Consumption totaled 9,942,070 bales of lint and 1,362,298 bales of linters, compared with 11,100,082 of lint and 1,300,936 of linters in the previous year. A record Brazilian crop of 2,507,600 bales was officially forecast in that country, and the Mexican Ministry of Agriculture announced drastic curtailment of the expected 388,000-bale yield to balance home consumption and greatly reduced exports.

Fabrics

Inactivity in the gray goods market in early August was broken near the end of the third week after OPA released the delayed increased prices on the print cloth yarn group, but selling even then was confined to military and essential civilian demands. Practically all duck production, including seconds and shorts, was taken by the government. Sheetings and osnaburgs were held largely to spot releases.

Recent offerings in limited quantities of elastic webbing of synthetic rubber from webbing mills have been reported by clothing manufacturers, and anklets with rubber tops are being made by some mills. Some elastic fabric manufacturers have stated that as soon as on-hand supplies of Buna S have been consumed, neoprene will again be utilized for civilian products. Recent price drops of 50% in the elastic fabrics black market have been reported.

Total textile production for 1944, W. Ray Bell, president of the Association of Cotton Textile Merchants of New York, said, can hardly be expected to go above 11,000,000,000 square yards.

Fixed Government Prices*

	Price per Pound	
Balata	Civilian Use	Other Than Civilian Use
Manaos Block	$0.38¾	$0.38¾
Swinam Sheet	.42½	.42½
Guayule		
Guayule (*carload lots*)	.17½	.31
Latex		
Normal (*tank car lots*)	.26	.43½
Creamed (*tank car lots*)	.26¾	.44¼
Centrifuged (*tank car lots*)	.27¾	.45¾
Heat-Concentrated (*carload drums*)	.29½	.47
Plantation Grades		
No. 1X Ribbed Smoked Sheets	.22½	.40
1X Thin Pale Latex Crepe	.22½	.40
2 Thick Pale Latex Crepe	.22	.39½
1X Brown Crepe	.21⅝	.38⅝
2X Brown Crepe	.21⅜	.38⅜
2 Remilled Blankets (Amber)	.21¼	.38⅛
3 Remilled Blankets (Amber)	.21⅛	.38⅛
Rolled Brown	.18	.35½
Synthetic Rubber		
GR-M (Neoprene GN)	.27½	.45
GR-S (Buna S)	.18½	.36
GR-I (Butyl)	.16½	.33
Wild Rubber		
Upriver Coarse (crude)	.12⅝	.26½
(washed and dried)	.20¼	.37⅝
Islands Fine (crude)	.14⅝	.28¾
(washed and dried)	.22½	.40
Caucho Ball (crude)	.11⅝	.24⅜
(washed and dried)	.19½	.37
Mangabiera (crude)	.08½	.19⅝
(washed and dried)	.18	.35½

*For a complete list of all grades of all rubbers, including crude, balata, guayule, synthetic, and latex, see Rubber Reserve Co. Circular 17, p. 169, May, 1943, issue.

QUALITY **INTEGRITY** **SERVICE**

63 YEARS WITHOUT REORGANIZATION

BELTING
Transmission—Conveyor—Elevator

HOSE
for every purpose
Water—Fire—Air—Steam

HOME RUBBER CO. TRENTON, N. J. STEAM NEVER BURN BLOW OUT PACKING CHICAGO NEW YORK

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Sheet & Rod Packings
for every condition

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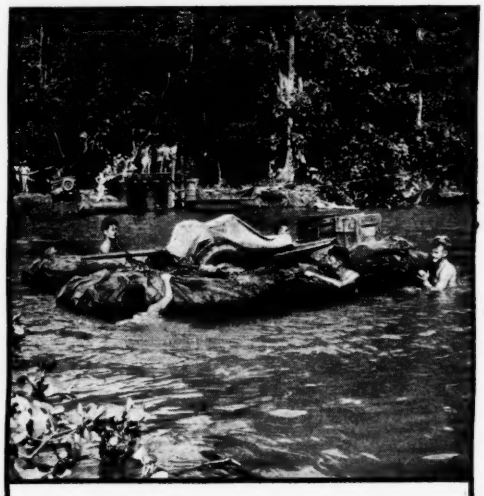
AMCO ESTABLISHED 1892

The ADAMSON MACHINE Co.

AKRON, OHIO . . . U. S. A.

Adamson mixing and molding equipment is built to meet modern production demands for greater accuracy at lower costs. What's your machine problem? A card will bring full particulars. Write today!

IT TAKES MEN AND MATERIAL TO WIN A WAR



Versatile is the word for Duck! Here, on South Pacific Island, Duck is used as pontoons to float a 37 mm. tank gun across a river. Duck tarpaulins, borrowed from 2½ ton trucks, are filled with small trees, twigs and grass. Pushed by swimmers, the duck-covered gun reaches the shore—high, dry and ready for business.

It Takes DUCK to Protect Them Both

Americans and their equipment fighting on European or Pacific fronts, need vast quantities of Duck for tents, tarpaulins, gun covers and other canvas products.

Because we supplied so much of our Duck to the Army and Navy, eight of the Army-Navy "E" awards made to the mills we represent, were for "Excellence" in the production of Duck. Wellington Sears Company, 65 Worth Street, New York 13, N. Y.

BUY MORE WAR BONDS

WELLINGTON SEARS COMPANY, NEW YORK

SCRAP RUBBER

APPARENT supplies of rubber scrap are termed adequate for expected accelerated demands in the near future. The demand in August was at lower levels than in July, and the market was reported as easy. Tire parts are said to be a drug on the market. Large inventories, lack of storage space, and a manpower shortage in the industry were reported as factors influencing lack of orders and shipments in the past month.

The Scrap Rubber Institute of the National Association of Waste Material Dealers has mailed out 5,000 posters to small dealers in an effort to help them segregate synthetic rubber from natural scrap. The dealers are informed that the value of synthetic scrap both now and in the future is problematical, but that if and when such material has any commercial value, the Institute will endeavor to inform dealers.

Scrap Rubber Ceilings

Inner Tubes†	¢ per Lb.
No. 2 passenger tubes	7¾
Red passenger tubes	7½
Passenger tubes	6

Tires‡	$ per Short Ton
Mixed passenger tires	20.00
Beadless passenger tires	26.00
Solid tires	36.00

Peelings†	
No. 1 peelings	47.50
No. 2 peelings	47.50
No. 1 light colored (zinc) carcass	52.50

Miscellaneous Items#	
Air brake hose	25.00
Miscellaneous hose	17.00
Rubber boots and shoes	33.00
Black mechanical scrap above 1.15 sp. gr.	20.00
General household and industrial scrap	15.00

† All consuming centers except Los Angeles.
‡ Akron only.
# All consuming centers.

RECLAIMED RUBBER

THE reclaim market in August was somewhat stimulated by the recent removal of some restrictions on the use of reclaimed rubber. Its supply is reported in good volume, and prices are unchanged.

It was reported that agreements were reached for increases in reclaim ceilings at the Reclaim Rubber Manufacturers Industry Advisory Committee meeting in Washington, D. C., August 15. Reasons set forth were increased labor costs in the industry. OPA approval and the effective date have not been confirmed.

It is further reported that a forthcoming revision of R-1 will remove restrictions on the use of scrap, reclaim, and synthetic rubber to permit manufacturers to make any article they can provided such activity does not interfere with war orders or manpower necessities in essential industries. Anticipated removal of restrictions on the use of colors, other than black, with regards to heels and soles are further expected to stimulate the reclaim industry.

Reclaimed Rubber Prices

Auto Tire	Sp. Grav.	¢ per Lb
Black Select	1.16–1.18	6½/ 6¾
Acid	1.18–1.22	7½/ 7¾
Shoe		
Standard	1.56–1.60	7 / 7¼
Tubes		
Black	1.14–1.26	11¼/11½
Gray	1.15–1.26	12½/13¼
Red	1.15–1.32	12 /12¾
Miscellaneous		
Mechanical blends	1.25–1.50	4½/ 5½
White	1.35–1.50	13½/14½

The above list includes those items or classes only that determine the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

Activator for Thiazole Accelerators

RIDACTO, an activator for thiazole accelerators, is a mobile liquid with a specific gravity of 1.06. The material can be used effectively, it is claimed, by reducing the primary thiazole accelerator and activating with Ridacto in a proportion to produce the desired curing rate. The persistent effect of the thiazoles is said to be partially eliminated, and vulcanizates with improved tear resistance and excellent retention of tensile and elongation after aging are obtained. Danger of scorching is also eliminated, according to Ridbo Laboratories, Inc., which developed the activator.

GRANULATED CORK

FOR EXTENDING RUBBER

SOUTHLAND CORK COMPANY

P. O. BOX 868 NORFOLK, VA.

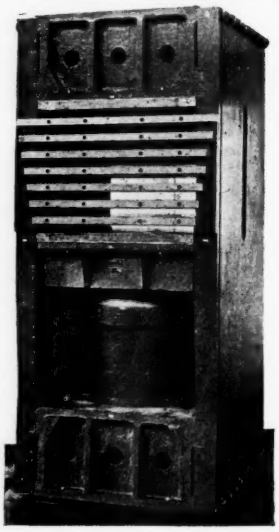
FOR ABRASION RESISTANCE USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 594)

FRENCH OIL 1005-TON

Upward Acting

HOT BED PRESS



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Model 2122

32″ Diameter, 16″ Stroke, Eight 2″ Openings, 42″ x 54″ Pressing Surface. Working Pressure 2,000 Pounds.

Write for Bulletin "Modern Hydraulic Presses."

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***The* FRENCH OIL MILL MACHINERY CO.**

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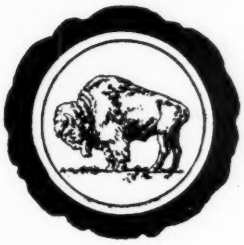

61 YEARS
of
Progressive Leadership

Through three wars and each succeeding economic cycle, through every turbulent period in the history of reclaimed rubber—hundreds of manufacturers have relied on U. S. Rubber Reclaiming Company, Inc., for their widely diversified requirements.

Never has our dual policy of *independent operation* and *laboratory-controlled uniformity* been altered to meet a *transient* condition within the industry. Our complete production has *always* gone to our customers who depend upon the known quality of Black Diamond, Matchless, Tioga, Ivorylite, Buffalo Special and our other standardized brands for quality maintenance of their own products.

With the approach of generally improved conditions and the resumption of more normal production of rubber products, the uses of reclaim are certain to be widened. To those potential new consumers, we offer the facilities of our technical and research staff to assist in solving production problems —a service our old friends have found to be an invaluable asset for so many years.

Whatever your requirements or problems . . . depend on U. S. Rubber Reclaiming Co., Inc., for prompt, understanding attention.

U. S. Rubber Reclaiming Co., Inc.

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AKRON	TRENTON	TORONTO
F. F. DUGAN	H. M. ROYAL, INC.	H. VAN DER LINDE, LTD.
907 Akron Savings & Loan Bldg.	689 Pennington Ave.	156 Yonge St.

COMPOUNDING INGREDIENTS

Current Quotations*

Abrasives

Pumicestone, powdered	lb.	$0.035	/$0.04
Rottenstone, domestic	lb.	.025	.03

Accelerators, Inorganic

Lime, hydrated, *l.c.l.*, New York	ton	25.00	
Litharge (commercial)	lb.	.085	/ .09
Eagle, sublimed	lb.	.085	/ .09
Magnesia, calcined, heavy	lb.		
technical, light	lb.	.0625	/ .07

Accelerators, Organic

A-1	lb.	.28	/ .33
A-10	lb.	.36	/ .42
A-19	lb.	.52	/ .58
A-32	lb.	.60	/ .70
A-77	lb.	.42	/ .55
A-100	lb.	.42	/ .55
Accelerator No. 8	lb.	.63	/ .65
49	lb.	.40	/ .42
552	lb.	1.63	
808	lb.	.59	/ .61
833	lb.	1.13	/ 1.15
Acrin	lb.	.65	
Advan	lb.	.55	
Altax	lb.	.39	/ .41
Arazate	lb.	1.53	
B-J-F	lb.	.34	/ .39
Beutene	lb.	.59	/ .64
Butasan	lb.	1.13	
Butazate	lb.	1.13	
Butyl Eight	lb.	.97	/ .99
C-P-B	lb.	1.95	
Captax	lb.	.34	/ .36
Cumate	lb.	1.60	
Cuprax	lb.	.60	
Cyclosure	lb.	.53	/ .63
D-B-A	lb.	1.95	
Delac P	lb.	.39	/ .48
Di-Esterex-N	lb.	.50	/ .57
DOTG (Diorthotolyguinidine)	lb.	.44	/ .46
DPG (Diphenylguanidine)	lb.	.35	/ .41
El-Sixty	lb.	.36	/ .43
Ethasan	lb.	1.13	
Ethazate	lb.	1.10	
Ethylidene Aniline	lb.	.42	/ .43
Ethyl Unads	lb.	1.25	
Formaniline	lb.	.36	/ .37
Guantal	lb.	.39	/ .48
Hepteen	lb.	.34	/ .39
Base	lb.	1.25	/ 1.40
Lead Oleate Witco	lb.	.15	
Ledate	lb.	1.20	
MBT	lb.	.34	/ .36
MBTS	lb.	.39	/ .41
Methasan	lb.	1.23	
Methazate	lb.	1.20	
Monex	lb.	1.53	
Morfex "33"	lb.	.60	/ .65
O-X-A-F	lb.	.38	/ .43
Pentex	lb.	.74	/ .84
Flour	lb.	.1225	/ .1325
Phenex	lb.	.49	/ .54
Pipazate	lb.	1.53	
Pip-Pip	lb.	1.63	
Polyac	lb.	1.25	
R & H 50-D	lb.	.42	.43
R-2 Crystals	lb.	1.55	
Rotax	lb.	.44	/ .46
Safex	lb.	1.15	/ 1.25
Santocure	lb.	.60	/ .67
Selenac	lb.	1.60	
SPDX-G	lb.	.53	.58
SRA No. 2	lb.	.53	/ .55
Super-Sulphur No. 2	lb.	.13	/ .15
Tetrone	lb.	1.25	
A	lb.	1.85	
Thiofide	lb.	39	/ 46
Thionex	lb.	1.25	
Thiotax	lb.	.34	/ .41
Thiurad	lb.	1.53	
Thiuram E	lb.	1.25	
M	lb.	1.25	
Trimene	lb.	.54	/ .64
Base	lb.	1.03	/ 1.18
Triphenylguanidine (TPG)	lb.	.45	
Tuads	lb.	1.25	
Tuex	lb.	1.25	
2-MT	lb.	.58	/ .60
Ulto	lb.	.99	/ 1.04
Ureka	lb.	.50	/ .57
Blend B	lb.	.50	/ .57
C	lb.	.48	/ .55
Vulcanex	lb.	.42	/ .43
Z-B-X	lb.	2.45	
Zenite	lb.	.37	/ .39
A	lb.	.42	/ .44
B	lb.	.39	/ .41
Zimate, Butyl	lb.	1.10	
Ethyl	lb.	1.10	
Methyl	lb.	1.20	

Activators

Activex	lb.	$0.20	/$0.22
Aero Ac 50	lb.	.46	/ .52
Barak	lb.	.50	
MODX	lb.	.295	/ .345
SL-20	lb.	.1089	/ .1135

Age Resisters

AgeRite Alba	lb.	1.95	/ 2.05
Gel	lb.	.52	/ .54
Hipar	lb.	.61	/ .63
Powder	lb.	.40	/ .42
Resin	lb.	.43	/ .45
D	lb.	.40	/ .42
White	lb.	1.23	/ 1.33
Akroflex C	lb.	.53	/ .55
Albasan	lb.	.69	/ .74
Aminox	lb.	.40	/ .49
Antox	lb.	.54	/ .56
Betanox	lb.	.43	/ .52
B-L-E	lb.	.40	/ .49
Powder	lb.	.61	/ .70
B-X-A	lb.	.43	/ .52
Copper Inhibitor X-872-A	lb.	1.15	
Flectol H	lb.	.43	/ .50
Neozone (standard)	lb.	.61	/ .63
A	lb.	.40	/ .42
C	lb.	.43	/ .45
D	lb.	.40	/ .42
Distilled	lb.	.45	/ .47
E	lb.	.61	/ .63
Oxynone	lb.	.77	/ .90
Permalux	lb.	1.18	/ 1.20
Santoflex B	lb.	.43	/ .50
BX	lb.	.54	/ .61
Santovar-O	lb.	1.15	/ 1.40
Solux	lb.	1.28	/ 1.30
Stabilite	lb.	.48	/ .50
Alba	lb.	.69	/ .74
Thermoflex A	lb.	.61	/ .63
C	lb.	.54	/ .56
Tysonite	lb.	.165	/ .17
V-G-B	lb.	.43	/ .52

Alkalies

Caustic soda, flake, Columbia			
(400-*lb. drums*)	100 lbs.	2.50	
Liquid, 50%	100 lbs.	1.75	
Solid (100-*lb. drums*)	100 lbs.	2.10	

Antiscorch Materials

Cumar RH	lb.	.105	
E-S-E-N	lb.	.34	/ .39
R-17 Resin (*drums*)	lb.	.1075	
RM	lb.	1.25	
Retarder W	lb.	.36	
Retardex	lb.	.445	/ .475
U-T-B	lb.	.34	/ .39

Antiseptics

Compound G-4	lb.	.95	/ 1.40
G-11	lb.	4.50	/ 4.75

Antisun Materials

Heliozone	lb.	.23	/ .24
S.C.R.	lb.	.32	/ .34
Sunproof	lb.	.2275	/ .2775

Blowing Agents

Unicel	lb.	.50	

Brake Lining Saturant

B.R.T. No. 3	lb.	.0175	/ .0185

Carbon Black

Conductive Channel—CC

Conductex A	lb.	.05	/ .085
Huber 35-C	lb.	.075	
Spheron C	lb.	.0455	
I	lb.	.0405	
N	lb.	.15	
Witco R20	lb.	.0455	
R40	lb.	.105	/ .14
Voltex	lb.	.105	/ .14

Hard Processing Channel—HPC

Continental F	lb.	.0355†	
Huber HX	lb.	.0355†	
Kosmobile S/Dixiedensed S	lb.	.0355†	
Micronex Mark II	lb.	.0355	/ .075
Spheron #4	lb.	.0355†	
Witco 6	lb.	.0355†	

Medium Processing Channel—MPC

Arrow	lb.	.0355†	
Continental A	lb.	.0355†	
Huber TX	lb.	.0355†	
Kosmobile 66/Dixiedensed 66	lb.	.0355†	
Spheron #6	lb.	.0355†	
Standard Micronex	lb.	.0355	/ .075
Witco 1	lb.	.0355†	

Easy Processing Channel—EPC

Continental AA	lb.	.0355†	
Kosmobile 77/Dixiedensed 77	lb.	.0355†	
Micronex W-6	lb.	.0355†	
Spheron #9	lb.	.0355†	
Witco 12	lb.	.0355†	
Wyex	lb.	.0355†	

Conductive Furnace—CF

Statex A	lb.	.08	/ .10
Sterling I	lb.	.09	

Fine Furnace—FF

Statex B	lb.	.07	/ .09

High Modulus Furnace—HMF

Kosmos 40/Dixie 40	lb.	.05	/ .075
Modulex	lb.	.05	
Philblack A	lb.	$0.05	/$0.06
Statex 93	lb.	.05	/ .075
Sterling L	lb.	.05	

Semi-Reenforcing Furnace—SRF

Continex	lb.	.035	/ .055
Furnex	lb.	.035	/ .06
Gastex	lb.	.035	/ .06
Kosmos 20/Dixie 20	lb.	.035†	
Sterling	lb.	.035†	
Witco	lb.	.035	/ .055

Fine Thermal—FT

P-33	lb.	.04	

Medium Thermal

Thermax	lb.	.0225	
Velvetex	lb.		

Colors

Black

Lampblack (commercial), *l.c.l.*	lb.	.15	

Blue

Du Pont Powders	lb.	2.25	/ 3.75
Toners	lb.	.30	/ 3.50

Brown

Mapico	lb.	.1135	

Green

Chrome	lb.	.25	
Oxide (*freight allowed*)	lb.	.25	
Chromium Hydroxide	lb.	.70	
Guignet's (*bbls.*)	lb.	.70	
Toners	lb.	.35	/ 4.00

Orange

Du Pont Powders	lb.	2.75	/ 3.05
Toners	lb.	.30	/ 1.50

Orchid‡

Pink‡

Purple‡

Red

Antimony			
Crimson, 15/17%	lb.	.48	
R.M.P. No. 3	lb.	.48	
Sulphur free	lb.	.52	
7-A	lb.	.37	
Z-2	lb.	.25	
Du Pont Powders	lb.	.48	/ 1.65
Iron Oxide, *l.c.l.*	lb.	.07	/ .15
Mapico	lb.	.0885	/ .096
Rub-Er-Red (*bbls.*)	lb.	.0975	
Toners	lb.	.25	/ 4.15

White

Lithopone (*bags*)	lb.	.0425	/ .045
Albalith	lb.	.0425	/ .045
Eagle	lb.	.0725	/ .0750
Titanium Pigments			
Rayox	lb.	.145	/ .155
Titanox-A LO and MO	lb.	.145	/ .15
C	lb.	.055	/ .0575
Ti-Tone	lb.		
Zopaque (*50-lb. bags*)	lb.	.145	/ .1525
Zinc Oxide			
Azo ZZZ-11	lb.	.0725	/ .075
44	lb.	.0725	/ .075
55	lb.	.0725	/ .075
66	lb.	.095	/ .0975
Eagle, lead free	lb.	.0725	/ .0750
French Process, Florence			
Green Seal-8	lb.	.09	/ .0925
Red Seal-9	lb.	.085	/ .0875
White Seal-7	lb.	.095	/ .0975
Kadox, Black Label-15	lb.	.0725	/ .075
No. 25	lb.	.085	/ .0875
72	lb.	.0725	/ .075
Red Label-17	lb.	.0725	/ .075
Horse Head XX Special 3	lb.	.0725	/ .075
XX Red-4	lb.	.0725	/ .075
78	lb.	.0725	/ .075
156	lb.	.0725	/ .075
166	lb.	.0725	/ .075
St. Joe (lead free)			
Black Label	lb.	.0725	/ .075
Green Label	lb.	.0725	/ .075
Red Label	lb.	.0725	/ .075
U.S.P. No. 12	lb.	.105	/ .1075
Zinc Sulphide Pigments			
Cryptone ZS No. 800	lb.	.0825	/ .085

Yellow

Du Pont Powders	lb.	.70	/ 1.75
Mapico	lb.	.0685	/ .071
Toners	lb.	.50	/ 1.37

Dispersing Agents

Bardex	lb.	.0425	/ .045
Bardol	lb.	.02	/ .0275
B	lb.	.05	/ .0525
Nevoll (*drums, c.l.*)	lb.	.02	/ .025

Extenders

Advagum 1098	lb.	.42	
1198	lb.	.40	
Extender C	lb.		
15	lb.	.32	
Naftolen R-100	lb.	.10	/ .12
Oroplast	lb.	.11	/ .155
"600"	lb.	.14	/ .16
Pentacizer 344	lb.	.20	

Fillers, Inert

Asbestos Fiber	ton	15.50	/ 48.00
Barytes	ton	25.55	/40.00
Off color, domestic	ton	29.00	
White, domestic	ton	38.50	/ 40.00
Blanc fixe, dry, precip.	ton	80.00	
Calcene T	ton	37.50	/45.00
Infusorial earth	lb.	.0225	
Kalite No. 1	ton	26.00	
Kalvan	ton	100.00	
Magnesium carbonate *l.c.l.*	lb.	.0625	/ .075

*Prices in general are f.o.b. works. Range indicates grade or quantity variations. Space limitation prevents listing of all known ingredients. Prices are not guaranteed, and those readers interested should contact suppliers for spot prices.

†Price quoted is f.o.b. works (bags). The price f.o.b. works (bulk) is $0.033 per pound. All prices are carlot.

‡Because of difficulty in interpreting OPA ceilings, consumers should contact supply houses for prices.

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES
Light face type $1.00 per line (ten words)
Bold face type $1.25 per line (eight words)
Allow nine words for keyed address.

SITUATIONS WANTED RATES
Light face type 40c per line (ten words)
Bold face type 55c per line (eight words)
Address All Replies to New York Office at 386 Fourth Avenue, New York 16, N. Y.

SITUATIONS OPEN RATES
Light face type 75c per line (ten words)
Bold face type $1.00 per line (eight words)
Replies forwarded without charge

SITUATIONS OPEN

WANTED:

RUBBER COMPOUNDER

Chemical engineer with practical experience in the compounding of natural and synthetic rubber. Write, giving details of experience and salary wanted.

INLAND MFG. DIVISION
General Motors Corporation
DAYTON, OHIO
c/o E. A. Gorham

WANTED: CHEMIST, EXPERIENCED IN ALL phases of compounding molded rubber goods. Knowledge of synthetic and plastic compounding preferred, but not necessary. Eastern concern. Excellent opportunity. Address Box No. 895, care of INDIA RUBBER WORLD.

CHEMIST AND FACTORY SUPERINTENDENT experienced in compounding and manufacture of mechanical goods, natural and synthetic rubber. Chicago area. Excellent opportunity. Address Box No. 896, care of INDIA RUBBER WORLD.

TIME STUDY AND MOTION ANALYSIS MEN—must have several years' experience with progressive company. Furnish complete history in first letter. Location away from Ohio. Address Box No. 897, care of INDIA RUBBER WORLD.

TIRE AND TUBE DEVELOPMENT AND CONstruction engineers, excellent opportunity in a medium-sized organization. Salary commensurate with ability. Plant located in Pennsylvania. Address Box No. 898, care of INDIA RUBBER WORLD.

CHEMIST—WITH BACKGROUND ON TIRES, tubes, or mechanical goods. This opening has real possibilities both in regard to salary and continuity of employment. Address Box No. 899, care of INDIA RUBBER WORLD.

TECHNICALLY TRAINED MAN EXPERIenced in product and process development of rubber and synthetic rubber by firm manufacturing mechanical products in Western New York State. Company has shown a steady growth for the past fifty years and has established itself as a leader in its field. Position offers sound postwar opportunities. Address Box No. 903, care of INDIA RUBBER WORLD.

FOSTER D. SNELL, INC.
Our staff of chemists, engineers and bacteriologists with laboratories for analysis, research, physical testing and bacteriology are prepared to render you
Every Form of Chemical Service
304 Washington Street **Brooklyn 1, N. Y.**

SITUATIONS OPEN (Continued)

WANTED

Experienced Rubber man with thorough knowledge of Rubber and production of textile loom parts. To take charge of small Rubber plant, with E. H. Jacobs Mfg. Company, Danielson, Connecticut.

WANTED: PLANT ENGINEER. LONG-ESTABLISHED SMALL rubber company located in Northeastern Indiana, needs services of plant engineer, or master mechanic to join staff. Applicant must be capable of doing some drafting, have knowledge of mechanics, good maintenance experience, and be able to follow through with development of production ideas. This is a newly created position, but a permanent one. This company's activities have contracted some during wartime, and it is therefore expecting and preparing for considerable expansion in its activities in the near future. An unusual opportunity will be presented to the right man joining the organization. Write fully, giving in detail experience and salary expected. Address Box No. 904, care of INDIA RUBBER WORLD.

CHEMIST OR CHEMICAL ENGINEER, EXPERIENCED IN RUBber processing and manufacture. Rubber Thread experience desirable, but not necessary. Duties include quality control, development and research work. Excellent postwar opportunities. Address Box No. 905, care of INDIA RUBBER WORLD.

WANTED: EXPERIENCED FOREMAN FOR mixing and calender departments. Waterproof Footwear and Miscellaneous Rubber Products. Plant in vicinity of Boston. Address Box No. 907, care of INDIA RUBBER WORLD.

CHEMIST-PRODUCTION ENGINEER, TO TAKE CHARGE OF laboratory and mill room of small, progressive concern. This is a good opportunity for a man desiring future security, and an opportunity to profit from initiative and ability. Plant located in Rhode Island. Address Box No. 912, care of INDIA RUBBER WORLD.

COST ACCOUNTANT TO INSTALL AND OPERATE STANDARD cost system in medium-sized tire factory in Middle West. Give age, education, experience, and salary record in reply. Address Box No. 913, care of INDIA RUBBER WORLD.

CHEMIST WITH MECHANICAL BACKGROUND, or engineer with chemical background wanted to take charge of compounding and quality control for the production of sheet packing, gasket cloths, and rubber and asbestos packing. Research, Development and Control work. Old established company. Postwar security. W.M.C. certificate required. Please give full history, photograph, and salary desired in first letter. Address Box No. 919, care of INDIA RUBBER WORLD.

SPREADING ROOM FOREMAN

with experience in general proofing.

Suburban Boston Area. Permanent postwar position. Must be able to furnish Certificate of Availability.

ADDRESS BOX NO. 910, Care of INDIA RUBBER WORLD.

BROCKTON TOOL COMPANY

Central Street QUALITY MOULDS FOR ALL PURPOSES **South Easton, Mass.**

THE FIRST STEP — A QUALITY MOULD

(*Classified Advertisements Continued on Page 703*)

Pyrax A	ton	$7.90	
Whiting			
Suprex White (precipitated calcium carbonate)	ton	32.50	
Witco, *c.l.*	ton	8.00	
Witcarb	ton	100.00	
R	ton	50.00	

Finishes

Mica, *l.c.l.*	ton	20.00	/$85.00
Rubber lacquer, clear	gal.	1.00	/ 2.00
Colored	gal.	2.00	/ 3.50
Shoe varnish	gal.	1.45	
Talc	ton	25.00	/35.00

Flock

Cotton flock, dark	lb.	.095	/ .112
Dyed	lb.	.45	/ .85
White	lb.	.12	/ .20
Fabrifil X-24-G	lb.	.095	
X-24-W	lb.	.135	
Filfloc 6000	lb.	.16	
F-40-9000	lb.	.105	
Rayon flock, colored	lb.	1.00	/ 1.50
White	lb.	.75	/ 1.25

Latex Compounding Ingredients

Accelerator 89	lb.	1.20	
Advawet	lb.	.46	
Aerosol (*drums*)	lb.	.35	
Antox, dispersed	lb.	.54	
Aquarex BBX Conc.	lb.	.70	
Areskap No. 50	lb.	.18	/ .24
100, dry	lb.	.39	/ .51
Aresket No. 240	lb.	.16	/ .22
300, dry	lb.	.42	/ .50
Aresklene No. 375	lb.	.35	/ .50
400 dry	lb.	.51	/ .65
Black No. 25, dispersed	lb.	.22	/ .40
Casein	lb.	.24	/.2475
Collocarb (Dispersed Wyex)	lb.	.06	/ .07
Copper Inhibitor X-872	lb.	2.25	
Darvan No. 1	lb.	.30	/ .34
2	lb.	.30	/ .34
Dispersex No. 15	lb.	.11	/ .12
20	lb.	.08	/ .10
Factex Dispersion A	lb.	.185	
Micronex, Colloidal	lb.	.06	/ .07
Neoprene Latex Extender Emulsion 17	lb.	.12	/ .14
Resin V	lb.	.13	
Santomerse D	lb.	.41	/ .65
S	lb.	.11	/ .25
Sodium Stearate	lb.	.40	
Stablex A	lb.	.90	/ 1.10
B	lb.	.70	/ .90
C	lb.	.40	/ .50
Sulphur, dispersed No. 2	lb.	.08	/ .12
Tepidone	lb.	.63	
Tysonite, dispersed	lb.	.32	/ .35
Zinc oxide, dispersed	lb.	.12	/ .15

Mineral Rubber

Black Diamond, *l.c.l.*	ton	25.00	/30.00
B.R.C. No. 20	lb.	.0105	/ .0115
Hydrocarbon, Hard	ton	25.00	/27.00
Lode	lb.	.04	/ .045
MilliMar	lb.	.055	
Parmr	ton	21.00	/29.00
Pioneer, *c.l.*	lb.	25.00	/30.00
Witco MR solid	ton	25.00	
Granular	ton	30.00	

Mold Lubricants

Aluminum Stearate	lb.	.23	/ .24
Aquarex D	lb.	.60	
MDL Paste	lb.	.25	
Colite	gal.	.90	/ 1.15
Dipex	lb.	.1275	/ .15
Lubrex	lb.	.25	/ .30
Rubber-Glo, conc. regular	gal.	.94	/ 1.15
Type W	gal.	.99	/ 1.20
Sericite	ton	65.00	
Soapstone, *l.c.l.*	ton	25.00	/35.00
Zinc Stearate	lb.	.30	/ .31

Oil Resistant

A-X-F	lb.	.82	/ .85

Reclaiming Oils

B.R.V.	lb.	.03	/ .0375
C-10	gal.	.19	/ .24
D-4	gal.	.17	/ .22
E-5	gal.	.15	/ .20
No. 1621	lb.	.016	/ .0235
S.R.O.	lb.	.015	/ .0225
X-60 (reclaiming)	gal.	.20	/ .28
X-443	gal.	.20	/ .27

Reenforcers, Other Than Carbon Black

Alumina, Hydrated			
Alorco C-740	lb.	.0375	/ .065
C-741	lb.	.0375	/ .065
Buca	ton	40.00	
Carbonex Flakes	lb.	.03	/ .035
S	lb.	.031	/ .036
Plastic	lb.	.031	/ .0335
Clays			
Aerfloted Hi-White	ton	10.00	
Paragon	ton	10.00	
Suprex	ton	11.00	/23.50
Catalpo, *c.l.*	ton	30.00	
Champion	ton	11.00	/23.50
China	ton	25.00	
Dixie	ton	11.00	
Hydratex R	ton	20.00	
"L"	ton	10.00	
Langford	ton	9.50	/20.00
Magnolia	ton	10.00	
McNamee	ton	$10.00	
#33	ton	30.00	
Par	ton	11.00	
Paraforce, *c.l.*	ton	50.00	
Witco, *c.l.*	ton	10.00	
Cumar EX	lb.	.0525	
MH	lb.	.065	/$0.1175
V	lb.	.0975	/ .1275
465 Resin	lb.	.035	
"G" Resin	lb.	.08	
Nevindene	lb.	.105	/ .135
Silene "EF"	lb.	.055	/ .06
Silical	ton	65.00	/85.00

Reodorants

Amora (ABCD)	lb.		
Coumarin	lb.	2.75	/ 3.25
Curodex 19	lb.	4.75	
188	lb.	5.75	
198	lb.	6.75	
Para-Dors (ABCDE)	lb.	.25	/ 4.00
Rodo No. 0	lb.	4.00	/ 4.50
10	lb.	5.00	/ 5.50
Vanillin	lb.	2.35	/ 2.95

Rubber Substitutes

Black	lb.	.09	/ .15
Brown	lb.	.105	/ .1875
White	lb.	.0975	/ .165
Factice			
Amberex Type B	lb.	.20	
Brown	lb.	.095	/ .19
Neophax A	lb.	.165	
B	lb.	.165	
White	lb.	.10	/ .20

Softeners and Plasticizers

Abalyn	lb.	.0722	/ .0947
Ambidex	lb.	.23	
"S"	lb.	.23	
B.R.T. No. 7	lb.	.02	/ .021
Belro Resin	*100 lb.*	2.71	/ 3.00
Bondogen	lb.	.98	/ 1.05
Bunnatol (for synthetic rubber)	lb.		
G	lb.	.40	/ .50
S	lb.	.40	/ .50
Burgundy pitch	lb.		
Butac	lb.	.085	/ .105
Circosol-2XH Elasticator for GR-S	gal.		
Dibenzyl Sebacate	lb.	.67	/ .74
Phthalate	lb.	.51	/ .59
Dibutyl Sebacate	lb.	.48	/ .565
Dicapryl Phthalate	lb.	.25	/ .30
Dipentene	gal.	.56	/ .58
Dipolymer Oil	gal.	.33	/ .38
Dispersing Oil No. 10	lb.	.0375	/ .04
Duraplex C-50 LV, 100%	lb.	.25	/ .295
Galex	lb.	.065	/ .20
Hercolyn	lb.	.1122	/ .1347
JMH	lb.	.65	/ .67
Myristilene	lb.	.20	/ .30
Nevinol	lb.	.13	/
No. 1-D Heavy Oil	lb.	.04	
16 Resin	lb.	.60	
Nuba resinous pitch (*drums*)			
Grades No. 1 and No. 2	lb.	.029	
3-X	lb.	.0425	
Palm oil (Witco) *c.l.*	lb.		
Palmalene	lb.	.15	
Para Flux (reg.)	gal.	.17	/ .18
No. 2016	gal.	.135	/ .19
Para Lube	lb.	.046	/ .048
Paradene No. 1 (*drums*)	lb.	.0525	
No. 2	lb.	.0525	
Special (*drums*)			
20 to 35° C. M.P.	lb.	.0625	
35 to 45° C. M.P.	lb.	.0625	
45 to 75° C. M.P.	lb.	.0575	
Paraplex G-25, 100%	lb.	.75	
Phthalate	lb.	.51	/ .59
Paroils	lb.	.0975	/ .18
Piccocizer "30"	lb.		
Piccolyte Resins	lb.	.15	/ .185
Piccoumaron Resins	lb.	.045	/ .15
Pictar	gal.	.18	/ .23
Pine tar	gal.		
Oil	gal.	.45	
Plasticizer B	lb.	.35	/ .45
35	lb.	.205	/ .24
36	lb.	.305	/ .34
Plastoflex No. 10	lb.	.20	
No. 20	lb.	.25	
Plastogen	lb.	.0775	/ .08
Plastone	lb.	.27	/ .30
Poly-pale Resin	lb.	.06	/ .07
R-19 Resin (*drums*)	lb.	.1075	
21 Resin (*drums*)	lb.	.1075	
Reogen	lb.	.115	/ .12
Resin R6-3	lb.	.38	/ .40
Rio Resin	lb.	.36	/ .38
RPA No. 1E	lb.	.55	
2	lb.	.65	
3	lb.	.46	
4	lb.	.80	
5	lb.	.57	
Santicizer B-16	lb.	.32	/ .36
E-15	lb.	.34	/ .38
M-17	lb.	.355	/ .39
Solvenol	gal.	.56	/ .58
Staybelite	lb.	.06	/ .065
Syntac	lb.	.275	/ .35
Tarzac	lb.	.23	/ .24
TP-10	gal.	.55	/ .75
90-B	gal.	.55	/ .65
Tricresyl Phosphate	lb.	.24	/ .245
Triphenyl Phosphate	lb.	.26	/ .27
Turgum "S"	lb.	.0675	
Vinsol Resin	lb.	.025	/ .035
Vistac No. 1	lb.	$0.20	/.$0.214
No. 2	lb.	.214	/ .227
Witco No. 20, *l.c.l.*	gal.	.20	
X-1 resinous oil (*tank car*)	lb.	.011	/ .016
XX-100 Resin	lb.	.0525	

Softeners for Hard Rubber Compounding

Resin C Pitch 45°C. M.P.	lb.	.01	/ .016
60°C. M.P.	lb.	.01	/ .016
75°C. M.P.	lb.	.01	/ .016

Solvents

Carbon Bisulphide	*100 lbs.*	5.75	
Tetrachloride	gal.	.80	
Cosol No. 1	gal.	.26	/ .34
No. 2	gal.	.25	/ .23
No. 3	gal.	.22	/ .30
Industrial 90% benzol (*tank car*)	gal.	.15	/ .22
Nevsol	gal.	.245	/ .31
Picco	gal.	.22	/ .32
Skellysolve	gal.	.071	/ .105
Tollac	gal.	.28	/ .33

Stabilizers for Cure

Barium Stearate	lb.	.29	/ .32
Calcium Stearate	lb.	.26	/ .27
Laurex (*bags*)	lb.	.1475	/ .1725
Magnesium Stearate	lb.	.31	/ .32
Stearex, single pressed	lb.	.14⅞	/ .15⅞
double pressed	lb.	.15⅜	/ .16⅜
Beads	lb.	.14⅜	/ .15⅜
Stearic acid, single pressed	lb.		
Stearite, *c.l.*	lb.	.1487	
Zinc Laurate	lb.	.29	/ .32
Stearate	lb.	.30	/ .31

Synthetic Rubber

Chemigum N-1	lb.	.53	/ .60
Hycar OR-15	lb.	.50	/ .65
OR-25	lb.	.45	/ .60
OS-10	lb.	.45	/ .60
Neoprene Latex Type dry weight			
60	lb.	.43	/ .44
571	lb.	.36	/ .40
Concentrated	lb.	.41	/ .42
572	lb.	.45	/ .46
Neoprene Type CG	lb.	.50	
E	lb.	.65	
FR-S	lb.	.65	
GN-A	lb.	.28	
KNR	lb.	.75	
Paraplex X-100	lb.	1.00	
Perbunan 26	lb.	.48	
Synthetic 100	lb.	.41	
"Thiokol" Type "A"	lb.	.45	
"FA"	lb.	.60	
ST	lb.	.66	/ .76
LP-2	lb.	.85	
Water Dispersions ("Thiokol" Latex) dry weight			
MF	lb.	.70	/ .80
MX-3112	lb.	.65	/ .75
WD-2	lb.	.75	/ .85
3	lb.	.75	/ .85

Tackifiers

B.R.H. No. 2	lb.	.015	
Plastac	lb.	.12	
TY-PLY Q	gal.	6.75	/ 8.00
A	lb.	6.75	/ 8.00
S	gal.	6.75	/ 8.00
A	gal.	6.75	/ 8.00

Vulcanizing Ingredients

Magnesia, light (for neoprene)	lb.	.25	
Sulphur	*100 lbs.*	2.05	
Insoluble, 60	lb.	.16	
Telloy	lb.	1.75	
Tonox	lb.	.50	/ .59
Vandex	lb.	1.75	
(See also Colors—Antimony)			

Waxes

Antisol	lb.	.225	/ .275
Carnauba, No. 3 chalky	lb.	.7125	
2 N.C.	lb.	.7675	
3 N.C.	lb.	.735	/ .745
1 Yellow	lb.	.8325	
2	lb.	.8125	
Carnube	lb.	.49	/ .59
Monten	lb.	.12	/ .17
Rubber Wax No. 118			
Neutral	gal.	.76	/ 1.31
Colors	gal.	.86	/ 1.41

Concentrated Mold Lubricant

COLITE CONCENTRATE, a low-cost mold lubricant, recently made available, is reported to be non-toxic, non-tacky, and of unusual efficiency. Because building up on the molds does not occur when Colite Concentrate is used, the molds remain clean, and processing is unnecessary. Removal of the cured rubber, to which is imparted a transparent satin-like finish, is also simplified. One part of Colite Concentrate to eight parts water is sufficient for general mold lubricant purposes, according to The Beacon Co., 89 Bickford St., Boston, Mass., the manufacturer.

Classified Advertisements

Address All Replies to New York Office at 386 Fourth Avenue, New York 16, N. Y.

Continued

SITUATIONS WANTED

CHEMIST, 38, PH.D., 16 YEARS' EXPERIENCE HEELS, SOLES, mechanicals, reclaiming. At present chief chemist of medium-sized Eastern plant. Available Nov. 1st. Chicago or vicinity preferred. Address Box No. 900, care of INDIA RUBBER WORLD.

PLASTICS CHEMIST: DESIRES RESEARCH DEVELOPMENT OR technical service position. Graduate chemist. Age 30. Married. Draft 2B. Four years' experience in molding, laminating, and casting synthetic resins. Postgraduate work in rubber and synthetic rubber technology. Now employed as supervisor of group evaluating new resins for commercial applications. Prefers East or Midwest. Salary $4,000. Address Box No. 902, care of INDIA RUBBER WORLD.

V-BELT ENGINEER WITH FOURTEEN YEARS' EXPERIENCE in rubber manufacturing, including production, sales, development, cost and machine design desires connection with small rubber company. Am most interested in setting up V-belt business on a profit-sharing basis. Also have general knowledge of other mechanical rubber products. Address Box No. 906, care of INDIA RUBBER WORLD.

CONSULTING, ENGINEERING AND DRAFTING service by engineer with a thorough mechanical background of 25 years' experience in the rubber industry. Service available includes design of rubber machinery, mechanical development, conveyor design, plant engineering and layout. Replies will be treated confidentially. Address Box No. 911, care of INDIA RUBBER WORLD.

SALESMAN, MANY YEARS' EXPERIENCE SELLING MECHANical rubber goods, seeks connection. Knows trade in New York City and Connecticut. Age 41. Good health. Honorable discharge from Army. Address Box No. 914, care of INDIA RUBBER WORLD.

MECHANICAL RUBBER GOODS REPRESENTATIVE with successful record desires permanent position with postwar prospects. Connections in New York and New England territories. Age 42. Good health. Address Box No. 915, care of INDIA RUBBER WORLD.

SITUATIONS WANTED (Continued)

RECENTLY ARRIVED FROM EUROPE

Outstanding ex-rubber manufacturer, strong personality, engineer, University graduate, energetic, high initiative, looks forward to utilizing properly his capacity and his industrial experience in rubber field in this country. Having founded, developed, and managed in Europe important factories with thousands of workers, he has demonstrated his exceptional knowledge and ability for organizing and planning production all kinds of rubber articles, from compounding to finished product, with most efficient processes. Highly specialized in footwear. Owns several patents with large present and postwar possibilities. He would assume vast responsibilities, general management, as top executive, eventually with capital. First-class references, morality, integrity, background. Address Box No. 917, care of INDIA RUBBER WORLD.

ESTIMATING AND STANDARD COSTS: 5 YEARS' EXPERIENCE with 2 years' experience in Mold and Die Construction. Age 27; married; draft—2 AF. Address Box No. 918, care of INDIA RUBBER WORLD.

RUBBER TECHNOLOGIST WITH SOME KNOWLEDGE OF PLASTics desires permanent position with progressive company where his experience may be employed to advantage. Address Box No. 920, care of INDIA RUBBER WORLD.

TECHNICAL SUPERINTENDENT WITH 25 YEARS in manufacturing mechanicals from natural and synthetic rubbers in various size plants. Thorough background as development engineer and compounder. Can estimate costs and provide specifications. Address Box No. 921, care of INDIA RUBBER WORLD.

ENERP RENE

A Non-Rubber Cement for Bonding Synthetic Rubber to Metal, etc.

THE ENERPRENE COMPANY

1910 First Central Tower, Akron, Ohio

The H. O. Canfield Co.

MANUFACTURE

Molded Specialties, Plumbers' Rubber Goods, Valves, Gaskets, Hose Washers, and Cut Washers of all kinds

Write for prices and samples

Offices and Works Bridgeport, Conn.
Chicago Office: 424 North Wood Street

CONTINENTAL-MEXICAN RUBBER CO., Inc.

745 Fifth Ave., New York City

Producer in Mexico of

GUAYULE RUBBER

Washed—AMPAR BRAND—Dried

Formerly Distributed By
CONTINENTAL RUBBER COMPANY OF NEW YORK
An Affiliated Company

Stamford Neophax Vulcanized Oil

(Reg. U. S. Pat. Off.)

For Use with Neoprene

THE STAMFORD RUBBER SUPPLY CO. STAMFORD CONN.

Makers of Stamford "Factice" Vulcanized Oil

(Reg. U. S. Pat. Off.)

SINCE 1900

(Classified Advertisements Continued on Page 704)

OUR REBUILDING PROCESS

1. INSPECTED
2. DISASSEMBLED
3. REBUILT
4. MODERNIZED
5. GUARANTEED

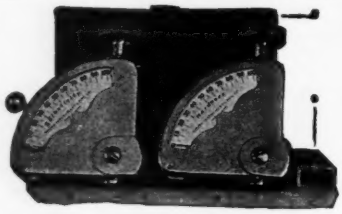
TRENTON, N. J. · AKRON, OHIO
MACHINERY
L. ALBERT AND SON
NEW AND REBUILT
LOS ANGELES, CALIF. · STOUGHTON, MASS.

OUR NEW MACHINES

MIXERS – MILLS
CUTTERS
SAFETY BRAKES
SUSAN GRINDERS
HYDRAULIC PRESSES
TRIMMERS
LIFT TABLES

An International Standard of Measurement for—
Hardness • Elasticity • Plasticity of Rubber, etc.

Is the DUROMETER and ELASTOMETER (23rd year)
These are all factors vital in the selection of raw material and the control of your processes to attain the required modern Standards of Quality in the Finished Product. Universally adopted.
It is economic extravagance to be without these instruments. Used free handed in any position or on Bench Stands, convenient, instant registrations, foolproof. *Ask for our Descriptive Bulletins, and Price List R-4 and R-5.*



THE SHORE INSTRUMENT & MFG. CO.
Van Wyck Ave. and Carll St., JAMAICA, NEW YORK
Agents in all foreign countries.

New Rubber Spreaders
Churns, Pony Mixers
Saturators

Used—Rebuilt—
Rubber—Chemical and
Paint Machinery

LAWRENCE N. BARRY
41 Locust Street **Medford, Mass.**

SPECIALIZING IN
USED MACHINERY FOR THE **RUBBER**
AND ALLIED INDUSTRIES
MILLS, CALENDERS, HYDRAULIC PRESSES,
TUBERS, VULCANIZERS, MIXERS, ETC.
ERIC BONWITT AKRON 8, OHIO

Classified Advertisements

Continued

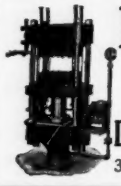
MACHINERY AND SUPPLIES FOR SALE

FOR SALE: 1—Watson-Stillman Hydro-Pneumatic Accumulator, 5½" ram, 48" stroke, 3000# pressure; 1—24x24" Hydraulic Press, 100 to 150 tons; 1—15x18" Hydraulic Press, 200-Ton, Hobing Press; 1—18x38" Farrel-Birmingham 3-roll Calender; 1—16x42" Calender, 3-roll, with drive and motor; 1—20x60" 3-roll Calender, herringbone drive; 1—Allen #3 Tuber; W. & P. Mixers; Dry Mixers; Pulverizers; Grinders, etc. Send for complete list. CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York 7, N. Y.

PHILIP TUCKER GIDLEY
Consulting Technologist Synthetic Rubber
We are equipped to perform all types of physical and chemical tests for synthetic rubber.
Fairhaven Massachusetts

SMALL RUBBER PARTS for WAR CONTRACTS
BLOWN • SOLID • SPONGE
FROM NATURAL, RECLAIMED, AND SYNTHETIC RUBBER
THE BARR RUBBER PRODUCTS COMPANY SANDUSKY OHIO

AIR BAG BUFFING MACHINERY
STOCK SHELLS HOSE POLES
MANDRELS
NATIONAL SHERARDIZING & MACHINE CO.
868 WINDSOR ST. HARTFORD, CONN.
Representatives
Akron San Francisco New York



PLASTICS MOLDING PRESSES
Plain or Semi-automatic—Any Size or pressure—Pumps, Valves, etc.
Dunning & Boschert Press Co., Inc.
336 W. WATER ST. SYRACUSE, N. Y.

GUARANTEED REBUILT MACHINERY

IMMEDIATE DELIVERIES FROM STOCK

MILLS, CALENDERS, TUBERS
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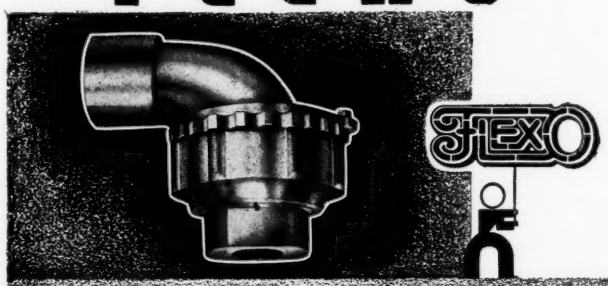
UNITED

HYD. PRESSES, PUMPS, MIXERS
CUTTING MACHINES, PULVERIZERS

UNITED RUBBER MACHINERY EXCHANGE
319-323 FRELINGHUYSEN AVE. CABLE "URME" NEWARK, N. J.

(Classified Advertisements Continued on Page 705)

FLEXO JOINTS



Since 1917

the outstanding swing joint; trouble free—long service.

FLEXO SUPPLY COMPANY
4218 Olive Street ST. LOUIS (8), MO.
Complete bulletin on request.

Classified Advertisements

Continued

MACHINERY AND SUPPLIES WANTED

WANTED: USED LEATHER SPLITTING MACHINE; SEND COMplete details. Address Box No. 901, care of INDIA RUBBER WORLD.

WANTED: ONE 54" MILL, COMPLETE WITH DRIVE AND motor, in good condition. DANBURY RUBBER CO., INC., Danbury, Conn.

WANTED: ONE NO. 2 ROYLE TUBING MACHINE WITH OR without apron mechanism and water-cooled stock worm. Must be in good working condition. Address Box No. 908, care of INDIA RUBBER WORLD.

WANTED: RUBBER MILL ABOUT 36", WITH OR without drive. Address Box No. 909, care of INDIA RUBBER WORLD.

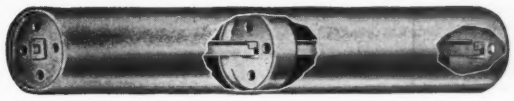
WANTED: HYDRAULIC PRESSES WITH HEATED PLATENS, 150 tons and up, also Banbury Mixer, Vulcanizer at least 5' diameter, and other good equipment wanted for expansion program. Address Box No. 922, care of INDIA RUBBER WORLD.

MANUFACTURE OF RUBBER FOOTWEAR

Important foreign rubber footwear company represented in U. S. A. by its directors would make arrangement with its financial participation with a first-class American Company for the production of all lines of footwear with its own processes and patents, many of them unique. Complete program already made and all technical data available to start immediately planning for postwar production.

ADDRESS BOX NO. 916, Care of INDIA RUBBER WORLD

NEW AND BETTER GAMMETER'S
ALL STEEL ALL WELDED CALENDER STOCK SHELL

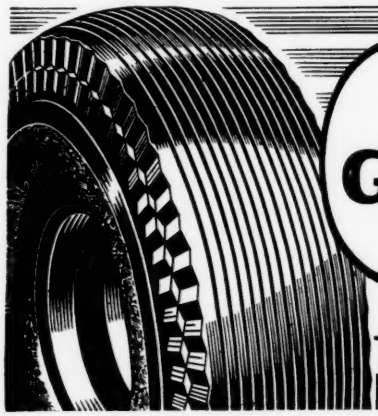


4" 5" 6" 8" 10" 12" diameters, any length.
Besides our well known Standard and Heavy Duty Constructions, we can supply light weight drums made up to suit your needs.
THE W. F. GAMMETER COMPANY
CADIZ, OHIO

FINELY PULVERIZED—BRILLIANT
COLORS
for RUBBER

Chicago Representative: FRED L. BROOKE, 228 N. La Salle St.
Pacific Coast Representative: MARSHALL DILL, San Francisco
Cleveland, PALMER-SCHUSTER CO., 975-981 Front St.

Manufactured by
BROOKLYN COLOR WORKS, Inc.
Morgan and Norman Aves. Brooklyn 22, N. Y.



The **GENERAL TIRE**
-goes a long way to make friends

Factory Control
KRAFT SYSTEM TIRE RENEWING

Look for this emblem on tires recapped by the Kraft System
KRAFT SYSTEM KRAFTIRED TIRE RENEWING
TRADE MARK REG. U. S. PAT. OFF.

THE GENERAL TIRE & RUBBER COMPANY • AKRON, OHIO

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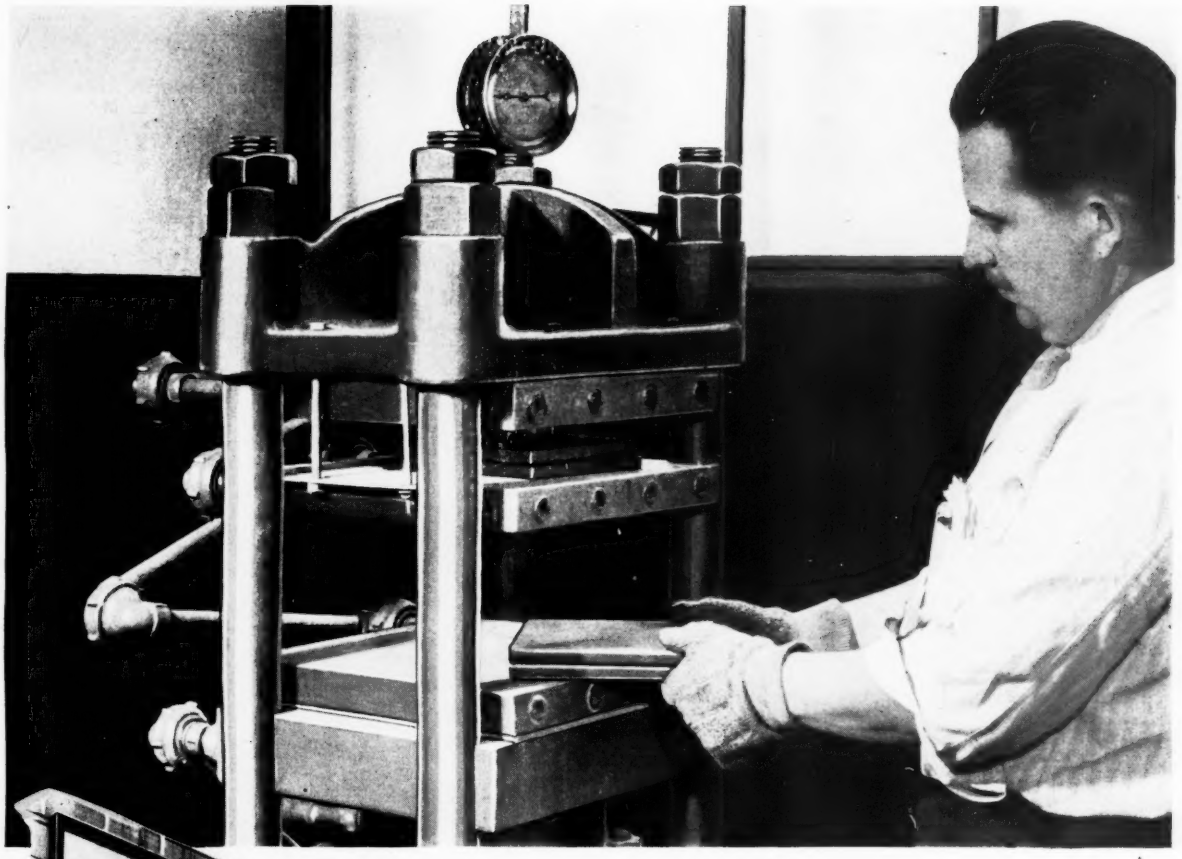


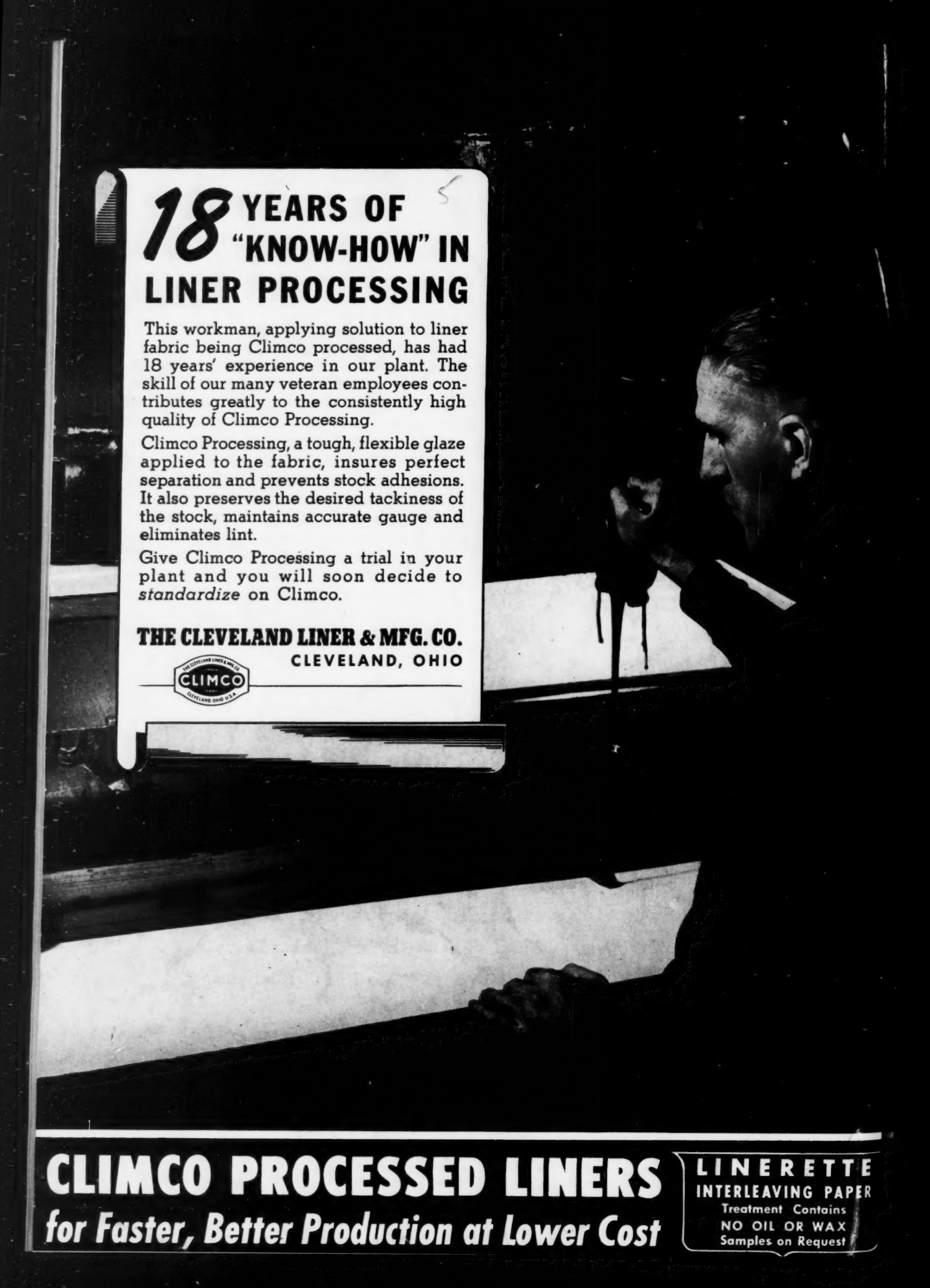
HELPING TO "CURE" SCRAP RUBBER AILMENTS

Difficulties in handling various types of synthetic rubber scrap along with natural rubber scrap must be overcome, to maintain the industry's wartime reclaiming schedule. This is a primary purpose of Schulman's laboratory research . . . developing the "know how" of handling all kinds of Scrap Rubber so as to obtain its fullest advantages, quickly and efficiently.

A. Schulman Inc.

SCRAP RUBBER

AKRON 9, OHIO • NEW YORK 18, NEW YORK • EAST ST. LOUIS, ILLINOIS • BOSTON 16, MASSACHUSETTS • CONNEAUT, OHIO



18 YEARS OF "KNOW-HOW" IN LINER PROCESSING

This workman, applying solution to liner fabric being Climco processed, has had 18 years' experience in our plant. The skill of our many veteran employees contributes greatly to the consistently high quality of Climco Processing.

Climco Processing, a tough, flexible glaze applied to the fabric, insures perfect separation and prevents stock adhesions. It also preserves the desired tackiness of the stock, maintains accurate gauge and eliminates lint.

Give Climco Processing a trial in your plant and you will soon decide to *standardize* on Climco.

THE CLEVELAND LINER & MFG. CO.
CLEVELAND, OHIO

CLIMCO

CLIMCO PROCESSED LINERS
for Faster, Better Production at Lower Cost

LINERETTE
INTERLEAVING PAPER
Treatment Contains
NO OIL OR WAX
Samples on Request